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ST JOHN'S MACAQUE.

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LLOYD'S NATURAL HISTORY.

EDITED BY R. BOWDLER SHARPE, LL.D., F.L.S., &c.

A HAND-BOOK
TO THE
PRIMATES.

BY

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PREFACE.

THE prefatory remarks in the preceding volume explain the purport of the "Hand-book" of the Primates, which has been undertaken by Dr. Forbes. I hope that the portion of the work devoted to the geographical distribution of these animals will be found to be of some interest; but, as explained by the author, the meagreness of the material in Museums renders the definition of the exact habitats of Monkeys extremely difficult.

R. BOWDLER SHARPE.

INTRODUCTION.

I HAVE little to add to the remarks given in the first volume of this "Hand-book." I may refer, however, to the interest which attaches to the study of the extinct forms of life, in relation to those which exist at the present day. Although I have endeavoured, to the best of my ability, to present to the student as complete a review of the species of Monkeys known to us at the present time, I am well aware that there is an enormous amount of work to be done before our knowledge of the Primates can be said to be complete. There is a natural repugnance to collecting specimens of Monkeys on the part of sportsmen. To shoot one feels like killing a sort of relation, and even our best collectors, who thoroughly understood the necessity of obtaining specimens in the interests of science, speak with a feeling of pain of the human-like distress which a wounded Monkey exhibits; and it is, therefore, difficult to induce travellers to shoot animals which offer so much of a "counterfeit presentment" to human beings.

The loose way in which the older naturalists expressed themselves in regard to geographical distribution, has also rendered a correct appreciation of the ranges of some of the Primates exceedingly difficult. Thus "Brazil" may mean

any portion of the South American continent from the Argentine Republic to the Amazons, and "Mexique" has done duty in many Museums for any locality between Mexico and Panama. Much, therefore, remains to be done to define the exact areas which the different species of Primates inhabit.

HENRY O. FORBES.

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ORDER PRIMATES.

THE BABOONS, MANGABEYS, AND MACAQUES

(*Continued*).

THE MACAQUES. GENUS MACACUS.

Macacus, Lacép., Mem. de l'Inst., iii., p. 450 (1801).

THIS genus embraces a large number of species which are characterised by having a thick-set body and short stout limbs, with the thumb set backward. The muzzle is considerably produced and rounded, but the nose does not extend as far out as the plane of the upper lip ; the nostrils open in advance of its termination, and are directed obliquely outwards and downwards ; their cheek-pouches are large, and their lips thick and protrusile ; their eyes are approximated, and look out from below thick and prominent superciliary ridges ; their ears are naked and applied flatly to the sides of the head and their hind upper angle is pointed ; their callosities, which extend with age, are often surrounded by a portion of the buttocks, which is always nude. The tail is long, short, tufted, or reduced to a mere tubercle, and it may be quite invisible externally. Some have the hair of the head long, and radiating in all directions ; others have the face encircled by a kind of mane. In some northern forms, the whole body is covered with a woolly fur, as a protection against cold.

In the skull the facial region predominates over the cranial, and the lower margin of the frontal bones are exerted to form a thick prominent ridge over the orbits and nose; the mastoid process on each side of the skull, behind the ear, is very prominent for the attachment of a muscle which assists in opening the mouth and in swallowing their food. Strong muscles also stretch from the back of the head to the spine for the support of the head. The canine teeth are long, and press against the anterior pre-molars of the lower jaw, the position of which is modified or distorted by the pressure, thus enabling these animals to crush and open hard-shelled fruits. Their anterior and median lower molars are four-cusped, while the posterior is markedly larger, and has five cusps and a posterior talon. The carpus, or wrist, possesses the central (*os centrale*) bone, and the fingers have their metacarpal bones elongated. The caudal vertebræ in the species of this genus are usually numerous; even in the short-tailed species they vary from fifteen to seventeen in number, the reduction in the length of the tail being the result of a great diminution in the size, not in the number, of the vertebræ. In the tail of one species (*M. inuus*), however, they are reduced in number to two or three; in the same species the tail lacks the chevron (or V-shaped) bones on its under side, as well as the processes to which the muscles for its movement are attached. Most of the Macaques have a throat-sac, which communicates with the larynx under the thyroid cartilage, and which fills with air, acting as a resonator to their voice.

The Macaques are among the commonest Monkeys of India and the East Indian islands. They occur also in Northern Africa (Morocco), and in Gibraltar, across the Straits. Eastwards they extend into Thibet and Northern China. They are

also found in Sumatra, Java, Borneo, Celebes, and in Timor, this being the most eastern habitat of any of the *Anthropoidea* except that of *Cynopithecus niger*. Dr. Blandford, in his "Mammals of British India," says that the species of the present genus resemble each other in their habits; they are found in flocks, often of considerable size, and generally composed of both sexes and of all ages. They are active animals, though less agile in their movements, whether on trees or on the ground, than the Langurs (*vide infra*). Their food is varied, most of the species, if not all, eating insects as well as seeds, fruits, &c., and one kind feeding entirely on Crustacea. They have occasionally been known to devour Lizards, and, it is said, Frogs also. All have the habit of cramming food into their cheek-pouches for mastication at leisure. . . . The voice and gestures of all the species (*M. silenus* perhaps excepted) are similar, and differ from those of both the Gibbons and Langurs. Tickell notices this in his MS. Notes, and gives the following details, which are worthy of quotation: "Anger is generally silent, or, at most, expressed by a low hoarse monotone, 'Heu,' not so guttural as a growl; ennui and a desire for company by a whining 'Hom', invitation, deprecation, entreaty, by a smacking of the lips and a display of the incisors into a regular broad grin, accompanied with a subdued grunting chuckle, highly expressive, but not to be rendered on paper; fear and alarm by a loud harsh shriek, 'Kra,' or 'Kraouh,' which serves also as a warning to the others who may be heedless of danger. Unlike the Langurs and Gibbons, they have no voice, if calling to one another."

The majority of the species are very docile when young. They thrive well, and several of them have been bred in confinement. The period of gestation is about seven months, only a

single young one, as a rule, being produced at a birth. They become adult at the age of four or five years, but breed earlier.

In regard to the expression of emotion among these Monkeys, Mr. Darwin has recorded of different species that when pleased they draw back the corners of the mouth in a species of smile, become red in the face when angry, and pale when afraid.

The term Macaque was given to these monkeys by Buffon, who took it, however, from what is supposed to have been the native name of an *African* species of Monkey, and misapplied it to this Indian group. *Macacus* is therefore the Latinised form of that word, which has now been applied too long to be changed.

I. THE BARBARY MACAQUE. *MACACUS INUUS*.

Simia inuus, Linn., Syst. Nat., i., p. 34 (1766).

Simia sylvanus, Linn., t.c. p. 35.

Inuus ecaudatus, Geoffr., Ann. Mus., xix., p. 100 (1812); Gray, Cat. Monkeys Brit. Mus., p. 32 (1870).

Le magot, F. Cuvier et Geoffr., Mamm., livr. ii. (1819); F. Cuv., Mammif., p. 114, pl. 41.

Macacus inuus, Desmar., Mamm., p. 67 (1820).

Inuus pithecus, Is. Geoffr., Cat. Méth., Primates, p. 31 (1851).

Macacus sylvanus, Schl., Mus. Pays-Bas, vii., p. 115 (1876).

Characters.—Body short and thick-set, and about as big as a moderately-sized Dog. Head oblong, long, rounded, and wrinkled; face and chin naked; eyes approximated, set deep below the superciliary ridges; brow small; neck short. Ears pointed at their hind upper angle, and their margins haired; nose not prominent; nostrils two slit-like orifices converging at right angles to the partition; lips slender, extensile; upper

lip broad ; callosities less extensive than in the Baboons ; tail invisible externally ; toes longer than the fingers, and both much haired. Hair on the crown short and reflexed ; hairs on the cheeks forming a whisker, directed backward ; hair of the fore-arms directed towards the elbow.

Crown, and sides of head, cheeks, neck, shoulders, upper back, and front of fore-limbs golden-yellow, mixed with a few black hairs, the individual hairs being dark grey at the base, ringed for the rest of their length with yellow and grey ; the rest of the upper part of the body greyish-yellow or yellowish-brown ; under side of lower jaw, lower side of body, and inner face of limbs greyish-yellow, or yellowish-white ; a dark spot of black hairs tipped with yellow at the inner angle of each eye, and stretching down on the cheeks ; naked parts of face, ears, and callosities pale flesh-colour, as also is the thinly-haired skin of the inner sides of the limbs ; tail represented by a small tubercle of naked skin. Length of the body, $2\frac{1}{2}$ feet.

Female.—Exactly resembles the male in coloration, but is slightly smaller in size, and more amiable in disposition ; the canines scarcely larger than the incisors.

Distribution.—This species, named by the French “Magot,” inhabits Morocco, and Algeria in Northern Africa. It is found also on the Rock of Gibraltar, and some distance inland in Spain ; but whether it has been transported from Africa, or has lived there since its ancestors were left isolated when the Straits of Gibraltar subsided and separated Europe from Africa, is a question impossible to decide now. It is certain that the Moors bring now, and probably for ages have been in the habit of bringing, captive specimens of this Monkey, to trade away on the European side ; it is, therefore,

not impossible that the "Apes of the Rock" may have thus been introduced. This is the only African (or European) species of the genus.

Habits.—This Monkey has been known to science for many centuries. It is now certain, as M. Frederick Cuvier remarks in his "History of Mammals," thanks to the researches of M. de Blainville upon the Monkey dissected by Galen, that the *Pithecus* of Aristotle was our Magot, as we know of no other species of Macaque without a tail. The Barbary Macaques, when on the ground, invariably walk on their four legs, but in an uneasy and clumsy manner compared with their motions when climbing; they are far more at home in trees or rocks, where they climb with amazing rapidity. They live chiefly on fruits and leaves, feeding themselves with their hands, and smelling everything they are uncertain about, before putting it into the mouth. They also eat grass very readily. They are found in large crowds in the forests of Barbary, which reach to the sea, and are very destructive to the cultivated fields of the Moors, on which they make constant raids, and during which, like the Baboons, they post sentinels to give warning of danger to their foraging friends. This Monkey sleeps on its side or in a sitting posture with its head dropped between its knees.

On the European side of the Mediterranean, these Apes were at one time very abundant on the Rock of Gibraltar, but as they robbed the gardens of the garrison they were killed by every means for several years, till they were eventually reduced to three. Orders were, however, issued by the authorities for their preservation, and a few additional pairs were imported from Africa. They now frequent the inaccessible ledges of the Rock, especially on its Mediterranean face, on which they climb about with marvellous rapidity.

In reply to inquiries about the present condition of the Barbary Apes (*Macacus inuus*) on the Rock, Dr. Sclater records in 1893 that General Sir Lothian Bell, the Governor of Gibraltar, had informed him "that they were now distinctly increasing in numbers. He had himself counted as many as thirty in one group, and, according to some reports, there were altogether as many as double that number on the Rock. In fact they were so numerous, and their depredations had become so serious that a short time ago an agitation had been got up for their reduction in numbers, and it would perhaps be necessary to thin them a little, but their extermination was quite out of the question, and would not be thought of."

These animals are remarkably affectionate parents, the mother constantly tending her single young one, while the males may often be seen carrying about some of the babies of the troop. When young the "Rock Ape" is playful and gentle; but, when old, becomes ill-natured and vicious.

When angry their jaws are moved up and down with great rapidity, while they give utterance to loud and harsh cries. The males fight with their strong canine teeth and their long and strong, though flat, nails, with which they are capable of inflicting deep wounds on each other. When in a good temper their voice is generally soft; but Mr. Darwin observed in the Zoological Gardens that a specimen there, when pleased, made a shrill note, and likewise drew back the corners of its mouth, apparently through the contraction of the same muscles as with human beings. The skin of the lower eyelids also became much wrinkled. "At the same time it rapidly moved its lower jaw or lips in a spasmodic manner, the teeth being exposed; but the noise produced was hardly more distinct than that which we call silent laughter. Two of the keepers affirmed that this

slight sound was the animal's laughter, and when I expressed some doubt on this head (being at the time quite inexperienced) they made it attack, or rather threaten, a hated *Entellus* Monkey, living in the same compartment. Instantly the whole expression of the face of the *Inuus* changed; the mouth was opened much more widely, the canine teeth were more fully exposed, and a hoarse barking noise was uttered."

II. THE BROWN MACAQUE. *MACACUS ARCTOIDES*.

Macacus speciosus, F. Cuvier, Mamm., pl. xlv. (Feb., 1825) (founded on a drawing).

Macacus arctoides, Is. Geoffr., Mag. de Zool., 1833, p. cli., pl. ii.; Sclater, P. Z. S., 1872, p. 203; Anderson, Zool. Yun-nan, p. 45, pls. i. and ii. (1878) with full synonymy; Blanford, Faun. Brit. Ind., Mamm., p. 17 (1891); Schl., Mus. Pays-Bas, viii., p. 116 (1876).

Papio melanotus, Ogilby, P. Z. S., 1839, p. 31.

Macacus melanotus, Gray, Cat. Monkeys Brit. Mus., p. 29 (1870).

Macacus thibetanus, Alph., Milne-Edwards, C. R., lxx., p. 341 (1870).

Macacus brunneus, Anderson, P. Z. S., 1871, p. 628, 1872, p. 203, pl. xii. (Jun.), 1874, p. 652.

Characters.—Body short and stout; head large; muzzle short and truncated; chin bulging; chin and throat almost nude; eyes large; ears large and rounded, with a pointed projection behind; limbs short, stout and strong; hands and fingers short, the terminal phalanges nude; tail almost rudimentary; callosities and surrounding region of buttocks naked.

Fur long and woolly (especially in those living at high

altitudes), longer on the head, back and limbs, shortest over the sacrum; hair on the head parted outwards from the centre; fingers slightly haired; tail thinly haired, or nude in old animals. In individuals living in the inclement regions of Eastern Thibet, the tail is thickly haired.

General colour dark brown or blackish; cheeks, underside of body, inner sides of arms and legs paler, washed with yellowish, the hairs being very closely ringed (in some more distinctly than in others), for their outer two-thirds, with alternating annulations of golden-yellow and brown, their terminal points dark brown. Face, ears, sub-caudal callosities, bright reddish flesh-colour, deeper round the eyes. Length of the body, 15-24 inches; tail $1\frac{1}{2}$ -2 inches.

In the young the fur is lighter. When first born it is of purely uniform brown, the annulations appearing and increasing in number with advancing age.

In a young Bornean specimen the sides, abdomen, and legs are light chestnut colour; the tips of many of the hairs golden, which with age changes more and more into blackish-brown. The tail is $3\frac{1}{2}$ inches long, and extremely slender for the last two-thirds of its length—a part easily lost in captivity.

Tongue with numerous papillated glandular crypts for lubrication of the cheek-pouches. Throat-pouch situated in an excavated hollow in the hyoid bone, the pouch being continuous with the convergence of the vocal chords.

Skull with strong inwardly projecting supra-orbital processes; external opening for the nostrils triangular. The anterior upper incisors appear first, followed by the anterior pre-molar, the median molar, the median pre-molar, and then the canines; anterior molar four-cusped; anterior lower molar five-cusped. Caudal vertebræ eleven in number.

Distribution.—Moupin in N.W. China, living on the snow-clad mountains; Upper Burmah (Bahmo); Siam; the Cachar and Kachin hill-region on the western frontier of the Province of Yun-nan, China; North-west Borneo, on the mainland opposite Labuan. This species has been recorded, but erroneously, from Madras, whither specimens are imported from Burmah, or from the Malayan Islands.

Dr. John Anderson, the distinguished naturalist of the Yun-nan Expedition, gives the following interesting remarks in reference to the distribution of this species: "*M. arctoides* would seem to have a considerable range of distribution, in which, however, it conforms to that which is distinctive of a large series of the Mammalian forms which occur in the same region. It has been obtained in Cachar, and I have learned of its existence in Upper Assam, and have procured it alive in the Kachin Hills on the frontier of Yun-nan, beyond which it spreads to the south-east of Cochin-China. It seems essentially to be a hill or mountain form—occurring only in the mountainous regions of Cachar, being absent in the valley of the Irawady, but stretching round it into Yun-nan from Upper Assam, being doubtless distributed over the mountainous region that intervenes between the Irawady and Cochin-China."

Habits.—Of this Macaque little is known in a wild state. It is, however, very docile and gentle in captivity. In life the tail is rarely carried erect, and is as a rule applied over the anus; its latter fourth being doubled on itself to the left, and serving to fill up the interspace between the divergent portion of the callosities, so that the animal sits on this portion of its tail, which contains only a few rudiments of vertebræ at its

base, and the upper surface of which is rough and somewhat callous. . . . Here we have a monkey which sits on its tail, and although it may be that it does not invariably do so, I am prepared to state, after careful observation, that it does so very frequently; and there is the more importance to be attached to this observation, because this habit appears to be a peculiarity of the species. (*Anderson.*)

III. RUFOUS STUMP-TAILED MACAQUE. *MACACUS RUFESCENS.*

Macacus rufescens, Anderson, P. Z. S., 1872, p. 204 (Juv.); id., Zool. Exped. Yun-nan, p. 79 (1878); Schl., P. Z. S., 1872, p. 495, pl. xxiv.; 1873, p. 194.

Macacus arctoides, Schl., Mus. Pays-Bas, vii., p. 116 (1876; part).

Characters.—Very nearly related to *M. arctoides*, of which it is perhaps only a southern race. Face red, more brilliant round the orbits; nose and lips brownish; tail stumpy, thinly haired. Fur rather brilliant brick-red, especially on the cheeks, flanks, and outside of the limbs. This animal is known, however, only from young specimens.

Distribution.—Malay Peninsula.

IV. THE MOOR MACAQUE. *MACACUS MAURUS.*

Macacus maurus, F. Cuvier, Mamm., pl. xlv. (Avril, 1823); Anderson, Zool. Exped. Yun-nan, p. 80 (1878, pt.; with full synonymy); Schl., Mus. Pays-Bas, vii., p. 117 (1876).

Cynocephalus niger (?), Quoy et Gaim., Voy. de l'Astrol., Zool., i., p. 67 (1830).

Macacus arctoides, Is. Geoffr., Zool. Bélang. Voy., p. 61 (1834); id., Arch. Mus., ii., p. 573.

Macacus ocreatus, Ogilby, P. Z. S., 1840, p. 56; Sclater, in Wolf, Zool. Sketches, ii., pl. i. (1865); id., P. Z. S., 1860, p. 420, pl. lxxxii.; Anderson, *loc. cit.*, p. 81 (pt.).

Macacus fusco-ater, Schinz, Syn. Mamm. i., p. 58 (1844).

Macacus inornatus, Gray, P. Z. S., 1866, p. 202, pl. xix.; id., Cat. Monkeys Brit. Mus., p. 129 (1870).

Characters.—Face narrow and elongated, nude, except for a few short hairs on the upper lip; nose flat; ears rather long, rounded, thinly haired; hair on one side of the head forming a somewhat large whisker; groin, region external to the callosities, and down the thighs thinly haired; tail very short, nude, curved upwards; frontal band, face, and ears black; callosities and the surrounding parts thinly-haired; region of the buttocks flesh-coloured; hairs on the upper lip black; whisker-tufts black, with greyish tips; rest of the head and body sooty-black; lower side of neck, rump, under surface of body, inside of limbs, fore-arms, legs, and back of thighs grey; tail, black. Length of body, 21 inches; of tail, 1 inch.

Young.—Greyish-black.

In the skull the outer surface of the outer margin of the orbits is flattened; the nasal bones are short and expanded.

This species is distinguished from *M. arctoides* and *M. fuscatus*, by the colour of the face being black, instead of bright red.

Distribution.—This species, whose true home was for a long time unknown, but was assumed to be Borneo, has been certainly ascertained to be confined to the Southern Peninsula of Celebes, and to the neighbouring island of Bouton. Dr. Anderson speaks of a Monkey from the Aru Islands, far to the east of Celebes, "if not identical with *M. maurus*,

at least so closely allied to it that I hesitate to separate it." The specimens both from Borneo and from Aru, if truly brought from these islands, must have been carried there in the stream of commerce from Celebes to the eastward in the first instance.

V. THE JAPANESE MACAQUE. *MACACUS FUSCATUS*.

Macacus speciosus, F. Cuv., Mammif., pl. 46 (1825); Murie, P. Z. S., 1872, p. 780; Sclater, P. Z. S., 1875, p. 418, pl. xlvii.; Schl., Mus. Pays-Bas, vii., p. 114 (1876.)

Inuus speciosus (nec F. Cuv.), Temm., Faun. Jap. Zool. Mamm., p. 9, pl. i., figs. 1 to 8; pl. ii., figs. 1 to 6 (1847); Gray, Cat. Monkeys Brit. Mus., p. 32 (1870).

Macacus fuscatus, Blyth, J. A. S. Beng., xlv., extra no., p. 6 (1875); Sclater, P. Z. S., 1876, p. 332; Anderson, Zool. Exped. Yun-nan, p. 78 (1878; with full synonymy).

Characters.—Face nude, prolonged forwards; muzzle prominent; superciliary ridges overhanging the eyes; eyebrows meeting in the mid-line; a bar over the eyes across the forehead bald, except for a few very short hairs; fur in general, long, soft, silky, and thick; short hairs forming a sort of whisker on the cheeks, continuous with the hair on the head and the moderately long beard; abdomen, chest, and inner surface of limbs thinly haired; ears large and, except on the margins, covered with long silky hairs; tail short, equally clad with long hairs, and with a terminal tuft, varying from 2–3 inches in length. Length of body, 24 inches. Face in life intensely red, with a purplish hue; nose and lower lip washed with brown; callosities and naked parts of the scrotal region purplish-red; sparse hairs of the face dark brown; general colour of fur dark brown, or yellowish-brown, or olive, darkest along

the middle of the back, the hairs being ringed with yellow and brown, or black and brown ; sides of head, breast, under surface of body, under sides of limbs, and under side of tail greyish ; beard yellowish-brown.

The hair is not annulated in the young animal.

Distribution.—Japan. Common on the hills at Kioto, according to Mr. Gower, who was H.B.M. Consul at Hiogo in 1875. Dr. J. Rein records that it is found all over the island of Nippon up to 41° N. latitude, and has consequently a further northern habitat than any other existing Monkey.

Habits.—Nothing is known of the habits of the Japanese Macaque ; but they are in all probability similar to those of its Indian relatives.

VI. THE LEONINE MACAQUE. *MACACUS LEONINUS*.

Macacus leoninus, Blyth, Cat. Mamm. Mus. A. S. Beng., p. 7 (1863) ; Sclater, P. Z. S., 1870, p. 663, pl. xxxv. (male and female) ; Anderson, Zool. Exped. Yun-nan, p. 52 (1878 ; with full synonymy) ; Blanford, Faun. Brit. Ind. Mamm., p. 18, fig. 6 (1891).

Macacus andamanensis, Bartlett, *Land and Water*, viii., p. 57 (1869) ; P. Z. S., 1869, p. 467.

Inuus leoninus, Blyth, J. A. S. Beng., xliv., p. 2 (1875).

Characters.—A thick-set, short-limbed, somewhat Dog-like animal ; head, broad, flat above ; the muzzle short ; tail short, turned over the back, about one-third the length of the body.

Upper surface of head with short fur radiating from the vertex, "surrounded in front and on both sides by a horse-shoe-shaped crest, the supra-orbital portion of which consists of very stiff hairs." (*Blanford*.) Face thinly covered with fine hairs ;

along the sides of the face a backwardly directed whisker meeting below the chin. Fur on the back of the neck, shoulders, and upper part of the fore-limb, long, shorter behind the shoulders and shortest on the rump; buttocks sparsely haired; tail somewhat tufted; belly and upper and inner parts of the limbs thinly haired. Length, 23 inches; tail (without the tuft), 8 inches.

Male.—Face brownish flesh-colour on the muzzle and between the eyes, bluish-white round the latter; frontal bar white; a narrow line from the outer corner of the eye backwards, red; a horse-shoe-shaped crest, mid-line of back, lower back, sacral region, and upper surface of tail, black, the hairs being grey at base, and dark brown, or black, along their outer portion; ears flesh-coloured, and the hair on and round them white; region above the eyes and round the face, chin, and throat, yellowish-brown—the hairs being ringed, above their grey bases, with dark brown and orange, and tipped with black; on the shoulders, back of the neck and upper part of the arms orange olive—the hairs having the orange rings more predominant than the brown; rest of the fore limb yellowish-olive; thighs dusky-grey, washed with black; buttocks grey; lower parts of body, inner sides of limbs, and under side of tail, light greyish-brown; caudal tuft often bright rufous. Excepting on the head, loins, tail, and buttocks, all the hairs are annulated, above their grey bases, with orange and brown, and dark-tipped. Hands and feet dusky flesh-colour.

Female.—Smaller than the males, but the black of the head and back absent, and the hairs of the under-parts not annulated; shoulders brighter than the rest of the body, which is yellowish-olive, and greyish-olive on the outside of the limbs.

Male.—Skull smaller, shorter, and more globular than that of *M. nemestrinus*, which is its nearest ally; muzzle less projecting; little or no depression of the nose between the eyes; supra-orbital ridges prominent; orbits large, approximated; skull of the female feebler in all respects.

Distribution.—Southern portion of Arracan, and the valley of the Irawady in Upper Burmah. The Andaman Islands, whence Mr. Bartlett described a specimen as a new species, was an erroneous habitat, as the specimen had been introduced there from Burmah.

Habits.—Very little is known of this rare species in its native state. In captivity the females and the males, when young, become very tame, and are capable of being taught various performances. A female which lived in the Zoological Society's Gardens in 1869 was educated by the blue-jackets of one of Her Majesty's ships, who had obtained her at the Andaman Islands, and kept her on board for three or four years before she was sent to the Gardens. "Jenny" exhibited an extraordinary degree of cleverness, as Mr. Bartlett, the Superintendent, has narrated in *Land and Water*. She could drink out of a bottle and smoke a pipe. She walked upright on her hind legs with remarkable facility, and with much less effort than even the performing Monkeys of the London streets. When in an erect attitude she would carry things.

VII. THE PIG-TAILED MACAQUE. *MACACUS NEMESTRINUS*.

Simia nemestrina, Linn., Syst. Nat., i., p. 35 (1766).

Le Maimon, Audeb., Hist. Nat. Singes, Fam. ii., Sect. i., pl. i. (1797).

Inuus nemestrinus, Geoffr., Ann. Mus., xix., p. 101 (1812).

Macacus nemestrinus, F. Cuvier, Hist. Nat. Mamm., livr. xlii. (1820); livr. xlv. (1822); Gray, Cat. Monkeys Brit. Mus., p. 29 (1870); Schl., Mus. Pays-Bas, vii., p. 110 (1876); Anderson, Zool. Exped. Yun-nan, p. 77 (1878; with full synonymy).

Characters.—Male.—Of large size, even approaching that of “a good sized Mastiff.” (*Anderson.*) Body short, and broad-chested; head flattened; muzzle long and Baboon-like; supra-orbital ridges large; limbs long and powerful; tail slender, about one-third the length of the body, pointed, and carried erect; face, ears, and callosities nude; sometimes a short membrane uniting the first phalanges of the fore and middle fingers and the second and third toes.

Fur short, longer over the shoulders; that on the top of the head radiating from a centre, short, erect and abundant; hair below and on the tail less abundant, that on the belly very sparse.

In the skull the protruding facial region is much larger proportionately than the cranial region; the orbits large, and nearly circular.

Face dark flesh-colour; ears and callosities the same; general colour of fur olive, the hairs being at the base grey, ringed higher up with alternate black and yellow bars, the predominance of the one bar over the other producing a brighter olive, even a yellow, or a deep brown colour; top of the head deep brown or brownish-black, extending along the middle of the back, broadening on the rump and basal part of the tail. Sides of the face blackish-grey; under surface of the body and inner side of the limbs greyish white; arms and legs lighter than the back; outer surface of the thighs olive-grey; hands and feet olive-brown.

Length of body, $18\frac{1}{2}$ inches ; of tail, 8 inches.

Females.—Similar to the males ; the young of both sexes more brightly coloured than the adults. Gestation in the Pig-tailed Macaque lasts, according to Dr. Blanford, seven months and twenty days. A singular variety of a female from the Baram river, in Sarawak, Borneo, is of a dark fulvous above, darker in the mesial line, much paler on the lower surface, and growing nearly white on the middle of the chest.

Distribution.—Tenasserim, and chiefly in the southern parts of that province ; Southern Burmah, the Malay peninsula, Bangka, Sumatra, Java, and Borneo.

Habits.—The Pig-tailed Macaque inhabits the thick jungles in the lower country, living in considerable companies, and feeding on fruits, seeds, and insects. “When young, these Monkeys are easily tamed,” as Mr. Charles Hose records, “and in some places they are used to climb the cocoa-nut trees to throw down the nuts, the Monkeys having been taught to throw down only the ripe ones.” This observation as to its collecting cocoa-nuts was also made many years ago by Sir Stamford Raffles in Sumatra. When old, the males are very savage, and will attack a Dog when provoked.

VIII. THE LION-TAILED MACAQUE. *MACACUS SILENUS*.

Simia silenus, Linn., Syst. Nat., i., p. 35 (1766) ; Schreber, Säugeth, i., p. 87, pl. xi. (1775).

Cercopithecus veter, Erxl., Syst. Regn. An., p. 24 (1777).

Simia ferox, Shaw, Gen. Zool., i., p. 30, pl. xvi. (1800)

Papio silenus, Geoffr., Ann. Mus., xix., p. 102 (1812) ; Kuhl. Beitr. Zool., p. 18 (1820).

Macacus silenus, Desm., Mamm., p. 63 (1820); Anders., Zool. Exped. Yun-nan, p. 93 (1878; with full synonymy); Blanford, Faun. Brit. Ind., Mamm., p. 16, fig. 5; Schl., Mus. Pays-Bas, vii., p. 109 (1876).
Silenus veter, Gray, Cat. Monkeys, Brit. Mus., p. 32 (1870).

Characters.—Head round; muzzle wide; hair on top of the head very short; face surrounded by long hairs, concealing the ears, and meeting under the chin; ears naked; face, hands, feet, and callosities naked; tail slender, one-half to three-quarters the length of the body and tufted with hair. Length, 24 inches; tail, 10 inches.

Skull rounded; muzzle wide in front, contracted at the base, concave beneath the orbits; orbital ridges large, and the frontal bone widely depressed behind them; pre-molars and molars small. The structure of this animal is essentially that of the ordinary Macaques, although it differs from them so much in external physiognomy. (*Anderson*).

Body, limbs, and tail deep black; a ruff of long hairs round the head, darkish grey; chest greyish or white; tail tipped with greyish or white; face, hands, and feet black; callosities flesh-coloured.

Distribution.—"The Lion-tailed Macaque inhabits the Western Ghats from below Goa to Cape Comorin, but there is no authentic record of its existence in a wild state in Ceylon." (*Anderson*.) It lives at a considerable altitude above the sea.

Habits.—This species, according to Jerdon (to whom, as Dr. Blanford observes, we are indebted for the only authentic account of this animal in a wild state), inhabits the most dense and unfrequented forests of the hills near the Malabar coast, in herds of from twelve to twenty or more. It is shy and wary.

In captivity it is sulky and savage, and not easily taught. The call of the male is said to resemble the voice of a Man.

IX. HIMALAYAN MACAQUE. *MACACUS ASSAMENSIS*.

Macacus assamensis, McClell.; Horsfield, P. Z. S., 1839, p. 148; Blyth, J. A. Soc. Beng., xiii., p. 746 (1844); Anderson, Zool. Exp. Yun-nan, p. 64 (1878; with synonymy); Blanford, Faun. Brit. Ind., Mamm., p. 15 (1888).

Macacus pelops, Hodgs., J. A. S., Beng., ix., p. 1213 (1840); Gray, Cat. Monkeys, Brit. Mus., p. 30 (1870).

Macacus problematicus, Gray, Cat. Monkeys, Brit. Mus., p. 128 (1870); Sclater, P. Z. S., 1871, p. 222.

Macacus rheso-similis, Schl., P. Z. S., 1872, p. 495, pl. xxv. (Juv.)

Macacus erythræus, Schl., Mus. Pays-Bas., vii, p. 112 1876; part).

Characters.—Larger and more strongly-built than *M. rhesus*. Fur moderately long, wavy, woolly (in some specimens), and without rings; the hair of the crown radiating from the centre of the forehead outwards and backwards; the hair round the face and on the chin rather long; that on and between the shoulders, and on the sides of the chest, longer than on the hind part of the body; hairs on the lower part of the flanks rather long; tail about, or less than, half the length of the body, not tufted, but longer, smaller, and much less densely furred than in *M. rhesus*; callosities surrounded by fur; ears tufted, and haired inside; beard well developed; face and ears dusky. Length, $26\frac{3}{4}$ inches; tail, $9\frac{1}{4}$ inches.

The fur above differs from that of *M. rhesus*, in the anterior half being uniform dark brown, wanting the ashy-grey tint; and the hinder portion brown, without the rufous seen in

M. rhesus ; the outside of the fore-limbs, the back of the neck, and region between the shoulders, brown, washed with yellowish or golden ; upper surface of head pale yellowish-brown ; flanks, front of fore-limbs, outer aspect of thighs, back of feet and tail, darker ; under surface of body and inside of limbs yellowish-grey or greyish-yellow ; behind the angle of the mouth, below and behind the ears, and on the chin, the hairs are yellowish-grey, tipped with black ; face and callosities, pale flesh-coloured.

The skull and skeleton agree closely with those of *M. rhesus*, but are somewhat larger. Canine teeth long, and deeply grooved in front.

Distribution.—This Macaque inhabits the Himalayan ranges as far west as Masuri, or perhaps further, from near the base of the hills to a considerable elevation (*Blanford*) ; it extends eastwards from the Nepal Region of the Himalaya through Assam and the north-eastern portion of Bengal into the upper or hilly portion of the valley of the Irawady. (*Anderson*.) This species is said to have its home generally between 3,000 and 6,000 feet above the sea. Dr. Anderson obtained on the Irawady, 25 miles below Bhamo, a female out of a large colony “living below the huge Deva-faced limestone cliff, at the foot of which lies the small pagoda of Sessoungan. The crews of passing boats and pious visitors generally throw rice and fruits to these Monkeys as a work of merit.”

Habits.—This species probably represents a Himalo-Burman race or sub-species of *M. rhesus*. Its habits are much the same as those of that species, but it is said to have a slightly different voice and to be more sluggish, according to *Blanford*.

X. THE BENGAL MACAQUE. *MACACUS RHEBUS*.

Simia rhesus, var. Audeb., Hist. Nat. Singes, Fam. ii., Sec. i., p. 5, pl. i. (1797).

Simia erythræa, Schreber, Säugeth, Suppl., pl. 8, fig. c.

Macacus erythræus, Cuv., Hist. Nat., Mamm., pl. xxxviii. (young; Oct., 1819); pls. xxxix. (1821) and xl. (1825; male); Gerv., Hist. Nat., Mamm., p. 91 (figs. ♂ and ♀; heads; 1834); Swinhoe, P. Z. S., 1870, p. 226; Schl., Mus. Pays-Bas, vii., p. 112 (1876).

Macacus rhesus, Desm., Mamm., p. 66, pl. vii., fig. 2 (1820); Anders., Zool. Exped. Yun-nan, p. 55, pl. iii. (with synonymy); Blanford, Faun. Brit. Ind., Mamm., p. 13.

Characters.—Body thick-set and with powerful limbs; face long and narrow, the muzzle somewhat projecting; a few short and coarse hairs on the lips, chin, and cheeks; eyes rather oval; ears somewhat large and sparsely haired. Fur moderately long and straight; hair of head coarse, not radiating, beginning on the orbital ridge, covering the forehead, and directed backwards; fingers haired to the end of the first digits; nails rather claw-like; toes haired; callosities surrounded by a semi-nude part of the buttocks; tail tapering, nearly one-half the length of the body. Length of males, 22 inches, with a tail of 10 inches; females, 16–18 inches, with a tail of 7–8 inches, the hair projecting $1\frac{1}{2}$ inch beyond the vertebræ.

Face flesh-coloured, and sprinkled with short, silky, buff-coloured hair; general colour of the fur on the anterior and upper surface of the body and arms, greyish-brown, the hairs ashy at base, ringed with yellowish or light brown, and tipped with darker brown, or even black, giving a rich rufous, speckled appearance; hinder quarters and outer aspect of the thighs

rufous-yellow, the hairs terminating in this colour ; lower parts pale yellowish-white, or pale rufous yellow ; base of the tail yellowish-chestnut, the rest browner ; callosities flesh-colour ; eyes yellowish-brown.

Distribution.—The Bengal Monkey is distributed abundantly throughout Northern India as far south as the Godavari river on the one side, and Bombay on the other, and was long considered to be a characteristic species of Bengal and Upper India. It occurs, however, as Dr. Anderson records, in the valleys of the mountain systems to the north and east of Akyab, and may be traced across the range of mountains that defines Arracan from Burmah, and also as far east as the left bank of the Irawady below Mandalay. It has been obtained in Assam, and by Dr. Anderson in Yun-nan during the expedition to that country. It is said to ascend to 10,000 feet in Kashmir. Mr. Swinhoe obtained this Monkey also in Hainan, and in the Province of Kiung Chow, in China.

Habits.—The Bengal Macaque, or Bandar, as it is named by the Hindoos, lives in troops of considerable size in jungle or low forest, and very often in rocky places, feeding on insects, fruits, and leaves. It is very frequently seen on the ground searching for food, according to Dr. Blanford, and near cultivation, especially around tanks or amongst trees on the banks of streams. It swims well and takes readily to water. It is a very quarrelsome species, perpetually screaming and fighting. If not really sacred to the Hindoos, it is at least rarely molested by them. Dr. Bowdler Sharpe informs the present writer that he observed a flock of these Macaques on the road to Simla, when nearing the latter place. They were running along the road, and as the "tonga" approached, they scrambled up the rocks, and jabbered vociferously, especially

the females, who were carrying their young. On Jacko there was, in 1885, a large troop of these animals, and they did considerable damage in the kitchen gardens of the mountain residences, so that the gardeners had to keep a sharp look-out, and fire at them occasionally. When he was staying at Mr. Hume's beautiful place at Simla in 1885, it was often necessary to drive off the Monkeys, and as one or two had been wounded by the head-gardener, the fakir who lived at the top of Jacko was much offended. This man had tamed the Monkeys to such an extent that, when he called them, the trees instantly began to move in all directions with the approach of numbers of these animals hastening to him for the peas which he had in readiness for them. They clustered round him, and though they would not allow strangers to stroke them, they came within arm's length and picked up their food. One patriarch, who remained for some time after the tribe had disappeared into the trees, was called the "Subadar," and wore quite a venerable appearance. Mr. R. Swinhoe has, in the "Proceedings of the Zoological Society of London," given the following curious Chinese observations, extracted from the "Chinese Gazetteer," in reference to this species, which is often called the Hainan Rock-Monkey: "How (or Monkey). The She-Show ('Notes on Animals') states that the Monkey has no stomach, but digests its food by jumping about. According to ancient authors, Kiung Chow abounds in Monkeys, and its people make a trade by selling young ones."

"About the jungles of Nychow (S. Hainan) these Monkeys," says Mr. Swinhoe, "were very common. On our landing, abreast of the ship we saw a large party of them on the beach, but they at once retired into a grove above high-water mark. We watched them running along the boughs of the trees and

jumping from branch to branch. The discharge of a fowling-piece soon made them scurry away into the thicket, but every now and again their heads would appear from the higher bushes, watching the movements of the enemy. At last, when they observed that our presence implied actual danger to themselves, they climbed the hills and posted themselves about conspicuous rocks, where they chattered and grunted out of danger. Their cries are very like those of *Macacus cyclopis* of Formosa."

The young clings to its mother's stomach for about a fortnight after birth, and is nursed with the greatest care by her; after that time it is able to move about by itself, and it thenceforward rapidly acquires the full use of its powers.

Mr. Darwin records that the face of the *M. rhesus*, when much enraged, grows red. When watching this species in the Zoological Gardens, he says: "Another Monkey attacked a Rhesus, and I saw its face redden as plainly as that of a Man in a violent passion. In the course of a few minutes, after the battle, the face of this Monkey recovered its natural tint. At the same time that the face reddened, the naked posterior part of the body, which is always red, seemed to grow still redder, but I cannot positively assert that this was the case."

XI. THE HAIRY-EARED MACAQUE. *MACACUS LASIOTIS*.

Macacus lasiotis, Gray, P. Z. S., 1868, p. 61, pl. vi.; id., Cat.

Monkeys, Brit. Mus., p. 129 (1870); Anders., Zool. Exped. Yun-nan, p. 83 (1878; with synonymy).

Macacus rhesus, Sclater, P. Z. S., 1871, p. 222.

Macacus erythræus (nec Cuv.), Schl., Mus. Pays-Bas, vii., p. 112 (1876).

Characters.—Very nearly allied to *Macacus rhesus*, from which it differs in its larger size, more hairy ears, and more richly

coloured fur, the hairs having the yellow rings rich orange or brick-red, especially on the hind quarters.

Fur long, fine, and silky, longest on the shoulders, neck, and upper surface of feet; hair on the top of the head not radiated; ears hairy; callosities surrounded by hair; a naked red spot at the outer angle of the eyes; tail about one-fourth of the body in length.

Male.—Dark rich olive-yellow; face pale flesh-colour; sides of the face, neck, and front part of the body olive-grey; hinder parts of the body brick-red; the slaty colour of the fore-limbs, and of the anterior aspect of the legs becoming black on the hands and feet; ears flesh-colour; callosities crimson; throat, chest, and inside of the fore-limbs greyish, washed with rufous above the wrists; belly and inside of the hind limbs greyish, washed with orange-red.

Female.—Fawn-colour, washed with red, especially on the lower back. Face brighter coloured than in the male. Tail one-fourth the length of the body.

Skull more massive, shorter, and markedly broader and with a more vertical muzzle than *M. rhesus*.

Distribution.—Province of Szechuen, W. China: Dupleix Mountains, 13,000 feet. (*Bonvalot*.)

Habits.—Little is known of the habits of this Chinese representative of the Bengal Macaque. In the winter it is said to have a splendid coat of rich brown hair, very long and thick. It is very fierce and powerful.

XII. THE TCHELI MACAQUE. *MACACUS TCHELIENSIS*.

Macacus tcheliensis, Milne Edwards, Rech. Mamm., p. 227, pls. xxxii. and xxxiii. (1868-1874); A. David, Journ. North China Branch As. Soc., 1873, p. 230.

Macacus rhesus (nec Audeb.), Scl., P. Z. S., 1871, p. 222.

Macacus erythræus, Schl., Mus. Pays-Bas, vii., p. 112 (1876).

Macacus lasiotis, Anderson, Zool. Exped. Yun-nan, p. 83 (1878 pt.).

Characters.—The *Macacus tcheliensis* is another species with a very close affinity to *M. rhesus*, and to *M. lasiotis*. Dr. Anderson, indeed, has united the Tcheli and the Hairy-eared Macaques under one species; while Dr. Sclater is not prepared to consider either of them, or *M. cyclopis* in addition, to be distinct from *M. rhesus*.

M. tcheliensis has the tail as long only as the hind foot, and densely clothed with long hair. Fur rather long, soft, and silky, and thicker than in the normal *M. rhesus*. General colour brilliant reddish-fawn, especially on the hinder part of the back and on the tail; sides of the cheeks and shoulders greyish, the yellow rings of the hair being absent; under surface of the body and inner side of the limbs grey; hands and feet greyish-fawn.

The skulls of *M. lasiotis* and *M. tcheliensis* are scarcely distinguishable from each other.

Distribution.—North China. Dr. Bushell, of H.M. Legation in Pekin, who was the first to send this rare Monkey to Europe, writes, in a letter dated 17th January, 1880: "It was obtained by me from the mountains near Yung-ling or Eastern Mausoleum, of the reigning Manchu dynasty, situated about 70 li from Pekin, in latitude 40° N. It is covered with a thick fur fitted to endure the bitterly cold winter of this part of North China, where the thermometer frequently goes down to 10° below zero."

Habits.—Nothing has yet been recorded of the habits of this Macaque in a state of nature.

XIII. ST. JOHN'S MACAQUE. *MACACUS SANCTI-JOHANNIS*.

(Plate XXVII.)

Inuus sancti-johannis, Swinhoe, P. Z. S., 1866, p. 556.*Macacus sancti-johannis*, Gray, Cat. Monkeys, Brit. Mus. App., p. 129 (1870; in part); Slater, P. Z. S., 1871, p. 222; Anderson, Zool. Exped. Yun-nan, p. 86 (1878).*Macacus rhesus*, pt. Slater, P. Z. S., 1871, p. 222.*Macacus erythræus*, pt. Schl., Mus. Pays-Bas, vii., p. 112 (1876).

Characters.—Male unknown.

Young Female.—Appears to be allied most nearly to *M. lasiotis*. Face narrow and somewhat projecting; eyes bright hazel; face and ears flesh-coloured; a black whisker-like tuft on either cheek; skin of the upper parts tinted with blue, and sparsely covered with hairs of a light grey; hairs of the belly buff; fur of the upper parts greyish-brown, washed with buff, which is lighter on the head, and brick-dust-red round about the rump. Tail, $4\frac{1}{2}$ inches long, blackish; callosities flesh-coloured. (*Swinhoe.*)

Distribution.—China; North Lena Island, and most of the small islands near Hong Kong.

Habits.—Nothing is known of the habits of St. John's Macaque. "Dried bodies of this animal," writes Mr. Swinhoe its describer, "split in two are often exhibited hanging from the ceiling in druggists' shops, in Canton and Hong Kong; and its bones are used for medicinal purposes."

XIV. THE FORMOSAN ROCK-MACAQUE. *MACACUS CYCLOPIS*.

Macacus cyclopis, Swinh., P. Z. S., 1862, p. 353, pl. xiii., 1864, p. 380; Slater, P. Z. S., 1864, p. 711 (woodcut); Anderson, Zool. Exped. Yun-nan, p. 87 (1878; with synonymy).

Macacus sancti-johannis, Gray, Cat. Monkeys, Brit. Mus. App., p. 129 (1870; in part); Scl., P. Z. S., 1871, p. 222.

Macacus rhesus, Scl., P. Z. S., 1871, p. 222.

Macacus erythræus, pt. Schl., Mus. Pays-Bas, vii., p. 112 (1876).

Characters.—Allied to *M. rhesus*, but the head round; the face flat, and round; supra-orbital region bare, as in other species; cheeks dark-whiskered; ears small and haired; a strong ruff-like beard; tail stout, thickly haired and tufted, 12 inches long. Fur thick and woolly; hair behind the mouth, and below and behind the ears ringed; hair not longer on the shoulders than on the rest of the body.

General colour olive-grey, or slaty; the hairs finely freckled with yellow; no rufous on the lower back and hind quarters; legs dark, and a distinct black line along the top of the tail.

The characters of the head, face, whiskers, beard, and the thick tail, and the absence of the rufous colour distinguish it from *M. rhesus*. *M. assamensis* is redder than *M. rhesus* or *M. cyclopis*, and has a long head, projecting face, and a short tail.

Female.—Smaller and rather lighter coloured than the male. At the love-period the naked posterior parts with the thighs and tail become excessively swollen, and florid.

Distribution.—The island of Formosa, where it is the only known species of Monkey.

Habits.—The late Consul Swinhoe was the discoverer of this interesting animal. He has given an account of its habits in the "Proceedings of the Zoological Society," from which we quote the following: "The Formosan Rock-Macaque affects rocks and declivities that overhang the sea, and in the solitary

caverns makes its abode. On the treeless mountain in the south-west, called Apes' Hill, it was at one time especially abundant, but has since almost entirely disappeared. About the mountains of the north and east it is still numerous, being frequently seen playing and chattering among the steep rocks, miles from any tree or wood. It seems to be quite a rock-loving animal, seeking the shelter of caves during the greater part of the day, and assembling in parties in the twilight, and feeding on berries, the tender shoots of plants, Grasshoppers, Crustacea, and Mollusca. In the summer it comes in numbers during the night, and commits depredations among the fields of sugar-cane, as well as among fruit-trees, showing a partiality for the small, round, clustering berries of the Longan (*Nephelium longanum*). In the caverns among these hills they herd; and in June the females may frequently be seen in retired parts of the hills with their solitary young one at their breasts. These animals betray much uneasiness at human approach, disappearing in no time, and skulking in their holes till the intruder has passed. They seem, too, to possess abundance of self-complaisance and resource; for I have frequently seen a Monkey seated on a rock by himself, chattering and crying merely for his own amusement and gratification. Whatever Mr. Waterton may say of the tree-loving propensity of Monkeys in general, it is very certain that this species shows a marked preference for bare rocks, covered only with grass and bush; for if he preferred the forest he might very easily satisfy his desire by retiring a few miles further inland, where he could find it in abundance. But, on the contrary, in the forest he is only an occasional intruder, resorting thither when food fails him on the grassy hills by the sea, where he loves to make his home. The Chinese have a fanciful idea that the tail of the

Monkey is a caricature of the Tartar pendant into which they twist their long black hair, and they invariably chop it off any Monkey that comes into their possession. Hence the difficulty of procuring Monkeys in China with perfect tails."

XV. THE CRAB-EATING MACAQUE. *MACACUS CYNOMOLOGUS*.

Simia cynomologus, Linn., Syst. Nat., i., p. 38 (1766); Schreber, Säugeth, i., p. 91, pl. xiii. (1775).

Le Macaque, F. Cuv., Hist. Nat., Mammif., livr. xxx., xxxi. (1819).

Macacus carbonarius, F. Cuv., Hist. Nat., Mamm. livr. xxxii. (Oct., 1825).

Macacus aureus, Geoffr. in Belang. Voyage, Zool., p. 58 (1834).

Macacus philippensis, Is. Geoffr., Cat. Méth Primates, p. 29 (1851).

Inuus (*Macacus*) *palpebrosus*, Wagner in Schreb. Säugeth, Suppl., v., p. 54 (1855).

Macacus fur, Slack, Proc. Acad. Sc. Philad., 1867, p. 36, plate.

Macacus cristatus, Gray, Cat. Monkeys, Brit. Mus., p. 30 (1870).

Macacus assameusis, Gray, *t. c.*, p. 31.

Cercocetus cynomologus, Schl., Mus. Pays-Bas, vii., p. 101 (1876).

Macacus cynomologus, Anderson, Zool. Exped. Yun-nan, p. 73 (1878; with synonymy); Blanford, Faun. Brit. India Mamm., p. 21 (1891).

Characters.—Body large and massive; head large and broad; legs short and stout; loins slender; hinder quarters heavy; tail thick at the root, nearly equalling the body in length; muzzle long; nose not prominent above the face; eyes large; ears erect, pointed, nearly hairless; frontal ridges not much overhanging the eyes.

Face pale brown, or livid with a bluish-white patch internal

to the eyes, the eyelids bluish-white ; ears, hands, and feet black ; callosities bright or dusky flesh-colour ; fur straight ; hair of the crown not elongated, directed backwards, sometimes radiated or slightly crested ; general colour of the upper surface dusky or greyish-brown, varying to reddish- or golden-brown ; under surface of the body and inside of the limbs brownish-grey to white, the hairs being dark at their roots, and higher up ringed with yellow and brown or black ; scrotum brown, blotched with livid blue. Length, 22 inches ; tail, 19 inches. The females are smaller.

Of this species there are several varieties or races, one in which the prominent colour is golden-rufous (*M. aureus*, Geoffr.) ; another (*M. carbonarius*, F. Cuv.) in which blackish-brown is the prevailing tint of the face, naked hands, feet, and callosities ; a third race has a light yellow fur (*M. cristatus*, Gray) ; still another (*M. philippensis*), from the Philippine Islands, is nearly white.

Distribution.—This species is one of the most widely distributed of all the Macaques. The more typical specimens are found in Burmah and Arakan. In Siam a pale variety with less orange in the annulations of its hairs occurs. In the Nicobar Islands (perhaps introduced as Dr. Blanford suggests), in the Malay Peninsula, and in Sumatra, Java, Bali, Lombock, and Timor, the darker (or *M. carbonarius*) variety seems to predominate. From Borneo—where it ascends to 5,000 feet above the sea—comes the crested, and perhaps also the golden-rufous coloured race (the true home of the latter being still unknown). In the Philippine Archipelago—in Mindanao, Basilan, Luzon, Negros, Samar, and others of the islets—the very light yellow coloured race is met with.

Habits.—The Crab-eating Macaque is gregarious, going about in troops of fifteen to twenty, of both sexes and all ages. They frequent the forests near the river mouths, and coastal mangrove swamps, where they may be constantly seen wading about in the mud, picking up Shrimps and Crabs, which are their favourite food. Tickell says that they swim and dive well. The females are easily trained, and also the young males; but these, when old, are apt to become ill-natured and uncertain in disposition. The mothers are good and tender to their young one, which clings closely with hands and feet for the first few weeks to the hair of the chest or arm-pits and abdomen.

Mr. Everett met with this species in the islands of Sirhassen and Bunguran in the Natuna group, where he says they were abundant. He adds: "They come down in large parties to the sea-shore, sitting in groups on the larger boulders, or playing and hunting for prey along the sands, when the tide is out. In mature animals, the face, hands, and feet are dark brown; the lower eyelids a paler brown; the upper eyelids and upper halves of the orbits whitish. In a very young male the bare skin of the face was livid brown, rather paler on the eyelids, and the hands and feet were dark brown" (*Oldfield Thomas and Hartert*, Nov. Zool., i., p. 654, 1894).

XVI. THE TOQUE MACAQUE. *MACACUS PILEATUS*.

Simia pileata, Shaw, Gen. Zool., i., p. 53 (1800).

Cercopithecus sinicus, Geoffr., Ann. Mus., xix., p. 98 (1812)

Macacus sinicus, Desm., Mamm., p. 64 (1820); Kelaert, Fauna Zeyl., p. 8 (1852).

Macacus pileatus, Blyth, J. A. S. Beng., xvi., p. 1272 (1847); Gray, Cat. Monkeys Brit. Mus., p. 29 (1870); Anderson, Zool. Exped. Yun-nan, p. 91 (1878; with synonymy); Blanf., Faun. Brit. Ind., Mamm., p. 24 (1891).
Cercocebus pileatus, Schl., Mus. Pays-Bas, vii., p. 98 (1876).

Characters.—Closely allied to *M. sinicus*; muzzle narrow and protruding; hair in general long, wavy, rough; on the head elongated, radiating from the centre of the top of the head, extending down on to the forehead, and occasionally rising into an erect tuft; tail equal in length to the body; forehead thinly haired and wrinkled. Length, 13 inches; tail, 14¾, in some reaching 21 inches; tail, 18 inches.

In coloration the Toque closely resembles the Bonnet Macaque, but the upper-parts are more rufous, the hairs of the present species (though ringed as in *M. sinicus*) being above the grey roots rufous-brown, or golden with a shade of chestnut at the tips. It is easily distinguished, however, by the face being livid flesh-coloured, with scattered black hairs, and the margin of the upper lip black; a space about the ears whitish; hands, feet, and ears blackish; the under surface of the body and the inner aspect of the limbs whitish; upper surface of the tail brown, its apex light brown or grey; callosities livid flesh-colour.

Female.—Limbs redder than in the male; inner side of the arms, and patches on the chest and belly indigo blue.

Young.—Hair of the crown not so much flattened down or so radiating as in the adult; the face more old-fashioned and exquisitely comical; the tail nearly naked; and the cheeks, palms, soles, and callosities pale pinkish. (*Templeton.*)

Distribution.—The Toque Macaque holds in Ceylon the place occupied by the Bonnet Macaque in Southern India.

Habits.—*Macacus pileatus* closely resembles the Bonnet Macaque in size, habits, and form. It is known to the Singalese by the name of Rilawa. "The little graceful grimacing *Rilawa*," as Sir J. Emerson Tennent writes, "is the universal pet and favourite of both natives and Europeans. The Tamil conjurers teach it to dance, and in their wanderings carry it from village to village, clad in a grotesque dress, to exhibit its lively performances. It does not object to smoke tobacco." Knox, in his interesting account of the island, gives an accurate description of the Rilawas, with "no beards, white faces, and long hair on the top of their heads, which parteth and hangeth down like a man's, and which do a deal of mischief to the corn, and are so impudent that they will come into their gardens and eat such fruit as grows there."

XVII. THE BONNET MACAQUE. *MACACUS SINICUS*.

Simia sinica, Linn., Mantissa, Plant., p. 521 (1771).

Cercocebus radiatus, Geoffr., Ann. Mus., xix., p. 98 (1812).

Le Toque mâle, F. Cuvier, Hist. Nat., Mamm., livr. xviii. (Juin, 1820).

Macacus sinicus, Blyth, J. A. S., Beng., xvi., p. 1272 (1847);

Gray, Cat. Monkeys Brit. Mus., p. 28 (1870); Anderson, Zool. Exped. Yun-nan, p. 91 (1878; with synonymy);

Blanford, Faun. Brit. Ind., Mamm., p. 23 (1891).

Cercocebus sinicus, Schl., Mus. Pays-Bas, vii., p. 99 (1876).

Characters.—Face nude; forehead thinly haired and wrinkled; cheeks hollow; muzzle narrow and protuberant; ears naked and rather prominent; tail nearly as long as the body.

Hair in general moderately long, straight and smooth, that on the crown elongated and radiating in all directions from the vertex, but not covering the forehead, on which the short and

sparse hairs are parted down the middle. Length, 27 inches; tail, 24 inches, but often proportionately longer.

General colour of the back and the upper side of the tail brownish-olive; outside of the limbs greyish—the hairs grey at the roots, ringed higher up with dull yellow and black bars; under surface of the body and inside of the limbs, and under side of the tail whitish; face, ears, callosities, and other nude parts livid flesh-colour.

Skull long, lower than that of *M. rhesus*; orbits with the transverse diameter greater than the vertical.

Distribution.—Inhabiting all Southern India, being conterminous with the *M. rhesus* on the east and west coast, the latter species coming as far south as, and the Bonnet Macaque going no further north than, the Godaveri river on the one side and Bombay on the other. (See page 23.)

Habits.—The Bonnet Macaque agrees in habits with those of the species already described. It lives in troops in the forests and jungles everywhere throughout its range. It is much kept in captivity, owing to its docility and its wonderful powers of mimicry.

THE MANGABEYS. GENUS CERCOCEBUS.

Cercocebus, Geoffr., Ann. Mus., xix., p. 97 (1812).

This genus has been established to receive a small, and but little known, group of Monkeys, which is confined to West Africa. They are nearly related to the Macaques on the one side, and even more closely to the genus *Cercopithecus*, next to be described, on the other side. They all have an oval head, and in form are more slender than the Macaques; they have also the muzzle less prolonged, the supra-orbital ridges less developed, the ischial callosities larger, and the limbs proportionately

longer. They agree with the Macaques, and differ from the *Cercopithec*i, or Guenons, in having a fifth hinder cusp to the posterior lower molar tooth in each jaw ; and differ from both in the hairs of the body rarely being ringed with different coloured bars, as is the case with the species of both the genera just mentioned. The nose is situated behind the end of the muzzle. Their most obvious external character, however, and one from which they derive their common name of "White-eyelid" Monkeys, is their pure white upper eyelids, the white streak being more distinct on the inner half of the eyelid than on the outer. These Monkeys want the laryngeal air-sacs seen in the Macaques ; but they have large cheek-pouches and a simple stomach, as in the latter. Their tail is always long, quite equalling the length of the body. The hands have a web between each of the fingers, that between the thumb and index finger being very short ; in their feet, the great-toe, which is widespread, has a short web uniting it with its neighbour ; the second and third toes are united nearly throughout their whole length, the fourth is webbed and united to the third and fifth as far as their mid-joints.

The Mangabeys are confined to West Africa. Like their relatives, the Macaques and the Guenons, they are arboreal, living in troops in the forest country, and feeding chiefly on fruits.

I. THE SOOTY MANGABEY. *CERCOCEBUS FULIGINOSUS*.

Cercocæbus fuliginosus, Geoffr., Ann. Mus., xix., p. 97 (1812) ;

Gray, Cat. Monkeys Brit. Mus., p. 27 (1870) ; Schl., Mus.

Pays-Bas, vii., p. 95 (1876).

Le mangabey, F. Cuv., Hist. Nat., Mammif., livr. vi. (May, 1819).

Simia fuliginosa, F. Cuv., Mamm., livr. xxxv. (Dec., 1821).

Cercopithecus fuliginosus, Martin, P. Z. S., 1838, p. 117.

Characters.—Hair on the crown of the head not elongated, but directed backward; no beard; eyebrows prominent. Face, ears, and hands nude; tail long and carried over the back; whiskers small, directed backward, below and behind the ears. Face of a livid brownish colour; ears, hands, and feet darker; fur on the upper parts of the body and the outside of the limbs soty-black; chin, throat, breast, cheek-whiskers to below the ears, the under side of the body, and inside of the limbs, ashy-grey; the whiskers sometimes of the same colour as the back; tail darker grey.

Distribution.—West Africa: Liberia.

Habits.—Writing of this species, Frederic Cuvier observes that it is of a happy disposition, gentle and companionable, but rather petulant. Ceaselessly active, it indulges in the most grotesque antics and attitudes, so that it has been believed [of course erroneously] that they possess more joints in their bodies than other species. The males especially have the constant habit of making a grimace which exhibits their long canine teeth. The females are still more gentle, and fond of being caressed.

Mr. Büttikofer found this species to be rather rare in Liberia. It was occasionally seen on low trees, but chiefly on the ground, where it searches for fallen fruits.

II. THE WHITE-COLLARED MANGABEY. CERCOCEBUS COLLARIS.

Mangabey à collier blanc, Buffon, Hist. Nat., xiv., p. 256, pl. 33; F. Cuvier, Mamm., livr. xxxv. (Dec., 1821)

Cercocetus æthiops, Geoffr., Ann. Mus., xix., p. 97 (1812), (nec

Simia æthiops, Linn.).



WHITE CROWNED MANGABEY.

Cercopithecus æthiops, Kuhl. Beitr. Zool., p. 97 (1820, nec *S. æthiops*, Linn.).

Cercopithecus æthiopicus, F. Cuvier, Mamm., livr. xxxv. (Dec., 1821).

Cercocebus collaris, Gray, List Mamm. Brit. Mus., p. 7 (1843); id., Cat. Monkeys Brit. Mus., p. 27 (1870); Schl., Mus. Pays-Bas, p. 96 (1876.)

Characters.—Hair on the crown of the head not elongated, but directed backward; whiskers small, directed backward; no beard. Face, ears, hands, and callosities nude; tail long, carried over the back.

Face, ears, and hands black; the top of the head rich reddish-brown; whole of upper side of the body, hinder part of the shoulders, back, external surface of both pairs of limbs, feet, and tail, greyish slate-colour; throat, breast, whole under side of the body and inside of the limbs white, as are the nape of the neck, sides of the face, the fore part of the shoulder, and the front aspect of the arms, as far as the top of the fore-arm; in many species a somewhat broad wash of slate-grey crosses the side of the face from the cheeks to below the ear.

Distribution.—West Coast of Africa.

III. THE WHITE-CROWNED MANGABEY. CERCOCEBUS ÆTHIOPS (Plate XXVI.)

Simia æthiops, Linn., Syst. Nat., i., p. 39 (1766).

Cercocebus æthiops, Geoffr. Cat. Méth. Primates, p. 25 (1851); Gray, List Mamm. Brit. Mus., p. 7; id., Cat. Monkeys Brit. Mus., p. 27 (1870); Schl., Mus. Pays-Bas, vii., p. 95 (1876).

Cercopithecus lunulatus, Temm., Esquiss. Guin., p. 37 (1853).

Characters.—This species is very similar to *C. collaris*, but differs in being slightly darker above, and in having a spot on

the back of the head, as well as a narrow streak down the back greyish-white.

Distribution.—West Africa.

IV. THE GREY-CHEEKED MANGABEY. *CERCOCEBUS ALBIGENA*

Presbytis albigena, Gray, P. Z. S., 1850, p. 77, pl. xvi; Murie, P. Z. S., 1865, p. 740.

Cercocebus albigena, Pucher., Rev. Zool., 1857, p. 241; Schl., Mus. Pays-Bas, vii., p. 97 (1876).

Cercocebus (*Semnocebus*) *albigena*, Gray, Cat. Monkeys Brit. Mus., p. 27 (1870).

Characters.—Face nude, except for a few short hairs on the cheeks and lips; a tuft of long stiff hairs projecting over each eye; hair of the body elongated on the fore-quarter and arm; on the crown and nape the hair long and directed backwards, forming a crest; hands and feet short, tail long, thumb small, and great-toe large and broad; face black.

General colour of the body black; cheeks, throat, a spot behind the ear, sides of the neck, shoulder, and front of the chest greyish; hairs on the face and over the eyes black; tail black; callosities black.

A younger specimen, which died in 1865 in the Zoological Gardens in London, had the throat, sides of the neck and front of the chest, dirty-brown; hairs of the cheeks of the same colour, and some of them also black.

Distribution.—West Africa.

V. THE BLACK MANGABEY. *CERCOCEBUS ATERRIMUS*.

Cercopithecus aterrimus, Oudem. Zool. Gart., xxxi., p. 267 (1890).

Cercocebus aterrimus, Scl., P. Z. S., 1893, p. 256 (note).

Characters.—Closely allied to *C. albigena*, but distinguished by its generally deep black colour, except on the shoulders and nape, which are blackish-brown or brownish-grey—the hair here being no longer than on the rest of the body; hairs on the cheeks, fine, velvety, and whitish; whiskers thick, greyish-brown; beard very sparse, whitish.

Distribution.—South-west Africa: Stanley Falls on the Congo.

Habits.—Unknown.

VI. THE CRESTED MANGABEY. *CERCOCEBUS GALERITUS*.

Cercocebus galeritus, Peters, M. B. Ak. Berl., 1879, p. 830, pls. i.B and iii. (Crania).

Characters.—A flat crest of blackish-brown hair radiating from the top of the head all round and over the forehead; the entire upper surface covered with long loose fur, the hairs grey at their base, and higher up ringed with greyish-green and blackish-brown; the fore-arms, hands, feet, and the basal three-fourths of the tail blackish-brown; the sides of the head and the whole under surface yellowish; the inside of the limbs yellowish-grey; the hair of the terminal part of the tail lighter than the rest, and ringed with yellow; face, bluish-black.

Distribution.—E. Africa; Mitola, at the mouth of the Osi and Tana rivers.

Habits.—This species was found living in the woods on the coast in small troops of from five to six in number.

THE GUENONS. GENUS *CERCOPITHECUS*.

Cercopithecus, Erxleben, Syst. Regn. Anim., p. 22 (1777).

The genus *Cercopithecus* includes a larger number of species than any other of the *Anthropoidea*. Its members are charac-

terised by their rather round head, slender but muscular bodies, narrow loins, and long hind limbs. Their tail is long, though shorter than in the genera next to be described, viz., the Langurs and the Guerezas. Their face is short, the muzzle less elongated, the cheek-pouches larger than in the Macaques. The nose is not prominent, and the nostrils are approximated, while whiskers are generally developed, as well as a longer or shorter beard. Their callosities are less extensive than in the Macaques. They have elongated hands with fingers united by a web at their bases; their thumbs, though distinct, being less developed in comparison than their great-toes. The fur is thick and soft, and in most of the species is ringed with differently and often brilliantly coloured bars.

The *Cercopithec*i have the skull depressed, presenting no very distinct brow, for its superciliary ridges are less prominent and angular, and their outer margin less projecting in comparison with those of the skulls in the genera already described. The orbits are considerably approximated. Their molar teeth are strongly cusped, and the posterior lower molar has only four cusps, and not five, as in the Macaques; but as in these animals, the two front cusps are united together by a transverse ridge, and the two hind ones are united together.

The Guenons are entirely confined to the African continent, where they range from the Gambia to the Congo, and from Abyssinia to the Zambesi; but the different species are each confined to small restricted areas. Being essentially arboreal, they live entirely in the forest regions, herding together in large troops. They can move from tree to tree with great rapidity, and can climb even on vertical surfaces with surprising quickness. They are abrupt and energetic in their movements, restless, and noisy, incessantly chattering and

making grimaces. The latter habit is so characteristic of them that they have obtained from it the name of *Guenon*, by which they are now so generally known, bestowed on them by the French. Their food consists of leaves, birds' eggs, and honey, but pre-eminently of fruits, while they are especially destructive to the ripe grain-fields of the natives near the woods in which they live. They feed voraciously, and carry off all that their cheek-pouches can hold, even after they are satisfied, or if they are called off by the warning-cry of the sentinel, who is said to be always placed on guard on some point of 'vantage when the troop is busy with its depredations. The Guenons are not only restless, but very inquisitive; they are, therefore, when young, very easily tamed, and as a consequence they are frequently to be seen as performers in circuses and exhibitions. When aged they are unreliable in temper, and often very ill-dispositioned. They are said, also, to repel with missiles any intruders into the region in which they are established in any numbers.

The known species—numbering about forty—have for the purposes of description and easy subsequent discrimination, been arranged into groups (based on a few of their more or less prominent characters) by different zoologists. Of these M. Isidore Geoffroy St. Hilaire, of Paris, and Professor Schlegel, of Leyden, may be specially mentioned; the arrangement of the latter forming a very convenient key for the determination of the species. Among the zoologists who have more recently revised this genus is the well-known Secretary of the Zoological Society of London, Dr. P. L. Slater, who has to some extent followed and improved upon Professor Schlegel's arrangement of the genus. In the present review, therefore, of the numerous species of this genus, the six groups

suggested by Dr. Schlater have been adopted. These are (I.) The Nose-spotted Guenons—*Cercopithecus rhinosticti*; (II.) The Green Guenons—*C. chloronoti*; (III.) The Rufous-backed Guenons—*C. erythronoti*; (IV.) The Black-limbed Guenons—*C. melanochiri*; (V.) The Tufted-eared Guenons—*C. auriculati*; (VI.) The Bearded Guenons—*C. barbati*; and lastly, The Three-cusped Guenons—*C. trituberculati*.

GROUP I. CERCOPITHECI RHINOSTICTI.

The members of this group have a distinct nose-spot of white, red, or blue.

I. THE LESSER WHITE-NOSED GUENON CERCOPITHECUS

PETAURISTA.

Simia petaurista, Schreb., Säügeth., i., p. 103, pl. xix. B (1775).
Blanc-nez, Buff., Hist. Nat., Suppl., vii., p. 67 (1789).

Cercopithecus petaurista, Erxl., Syst. Regn. An., p. 35 (1777);
Martin, Mammif. An., p. 539 (1841); Wagn. in Schreber's
Säügeth., Suppl., v., p. 250 (1855); Gray, Cat. Monkeys
Brit. Mus., p. 20 (1870); Schleg., Mus. Pays-Bas, vii., p.
86 (1876); Schl., P. Z. S., 1893, p. 244.

Ascagne (*Cercopithecus ascanius*), Audeb., Hist. Nat. Singes,
Fam. iv., Sect. ii., fig. xiii.; F. Cuvier, Nat. Hist.,
Mamm., i., livr. xiv. (Fev., 1820).

Characters.—Head round, the forehead rather elevated; nose broad; face and nose covered with short hairs; whiskers short; chin bearded. Head, back, upper side of tail, olive-green—the hairs grey at the base—ringed with darker or lighter yellow and black; facial hairs black, slightly washed with fulvous on the cheeks; skin below bluish-red or violet; lower part of the nose and half of the upper lip white; whiskers and beard white; line across the forehead above the eyes and the ears, and en-

circling the crown behind, black; a pencil of hair below the ears directed backward, white; throat, chest, under side of body, inside of limbs and under side of tail white; posterior aspect of fore-arms and legs grey, washed with olive; naked parts of chin, ears, and hands purplish-black.

Distribution.—West Africa: Gold Coast and Sierra Leone.

Habits.—The Ascagne, as this animal is also named, is the most common of the Guenons seen in menageries. It is gentle, graceful, and lively. They are perpetually in motion, “gambolling with their companions, and pursuing or being pursued by them, in the exuberance of playfulness. They are at the same time docile and familiar, but dislike to be taken hold of, or interfered with.” (*Martin.*) Allamand says that his specimen, which was in general very gentle, became angry when interrupted while eating, or if it was gibed at, but its irritation did not last long.

II. JENTINK'S GUENON. *CERCOPITHECUS SIGNATUS*.

Cercopithecus signatus, Jentink, Notes, Leyd. Mus., viii., p. 55 (1886); Sclater, P. Z. S., 1893, p. 257.

Characters.—Very similar to *C. petaurista*. Sides of head grizzled—the hairs ringed with white, yellowish, and black—and separated abruptly from the reddish upper portion of the head by a black band from ear to ear over the orbits, but not running round the vertex; ears somewhat larger than in *C. petaurista*.

Cranial portion of skull higher, and the facial portion more produced than in *C. petaurista*; the jaws longer, and the orbits rounder and wider.

Distribution.—Supposed to be from West Africa, but its habitat is not known with certainty.

III. THE RED-BELLIED GUENON. *CERCOPITHECUS*
ERYTHROGASTER.

Cercopithecus erythrogaster, Gray, P. Z. S., 1866, p. 169, pl. xvi., 1868, p. 182; id., Cat. Monkeys Brit. Mus., p. 128 (1870); Murie, P. Z. S., 1866, p. 380; Schleg., Mus Pays-Bas, vii., p. 69 (1876); Sclater, P. Z. S., 1893, p. 252, 1894, p. 1.

Characters.—Fur blackish, speckled with yellow, especially on the head, the hairs being black ringed with yellow; face black; nose-spot white; moustache and frontal band from the temple to the ears black; on each cheek a whitish-yellow spot; whiskers, beard, throat, and sides of neck yellowish-white; chest and under surface of body rufous; inner side of the front of the thighs, and under side of the tail greyish-white; outer aspect of thighs and hind legs grey, speckled with black. Length of body, 13½ inches; of tail, 16 inches.

In the young female the top of the head is yellowish, this colour extending towards the nape.

Distribution.—West Africa. This species has been only once exhibited in the Zoological Gardens of London, viz., in 1866, but recently, according to Dr. Sclater, a specimen lived for a short time in the Zoological Gardens of Rotterdam.

Habits.—Nothing is known of the habits of the Red-bellied Guenon in a state of nature; but Dr. Murie has written of the one that lived for two months in the Zoological Gardens: "Its nature appeared mild and harmless, by no means grave or sedate, indeed rather inclined to be lively and playful, with but little disposition to be quarrelsome. The keeper noticed that it appeared timid, and somewhat distrustful of its more romping companions. but freely approached him, and when

taking food out of his hand seemed pleased, and gently played with his fingers without attempting to bite."

IV. BÜTTIKOFER'S GUENON. *CERCOPITHECUS BUETTIKOFERI*.
Cercopithecus buettikoferi, Jentink, Notes, Leyd. Mus., viii., p. 56
(1886); Sclater, P. Z. S., 1893, p. 244.

Characters.—Büttikofer's Guenon agrees in all respects with *C. petaurista*, but wants the black band from ear to ear round the vertex. Of this band "there is no trace, in a series of eight specimens, containing adults and young, males and females" (*Jentink*). Irides brown.

Distribution.—West Africa : Liberia.

V. MARTIN'S GUENON. *CERCOPITHECUS MARTINI*.

Cercopithecus martini, Waterh., P. Z. S., 1838, p. 58; 1841, p. 71; Martin, Mammif. Anim., p. 542 (1841); Gray, Cat. Monkeys Brit. Mus., p. 21 (1870); Scl., P. Z. S., 1884, p. 176, pl. xiv.; 1893, p. 245.

Cercopithecus nictitans, Schl., Mus. Pays-Bas, vii., p. 89 (1876).

Description.—Allied to *C. petaurista*. Fur tolerably long and but loosely applied to the body. Face naked; whiskers bushy; beard short; tail very long; callosities small. Length of body (type specimen), 22 inches; tail, 26. Length of a female, 19 inches; tail, 24. General colour of head, back, and upper side of the basal part of the tail olive-green, distinctly annulated, the hairs being grey at their base, ringed above with several bars of yellowish-green and black. Face blue; nose-spot, commencing in the middle of the ridge, and extending over its sides and the upper and lower lips, yellowish-white; a black line extending up the ridge of the nose from the end of the white spot to the brow and encircling the eyes;

a black bar crossing the forehead from ear to ear ; whiskers green ; beard white ; throat, chest, under side of body, inside of limbs and under side of three-fourths of the tail, greyish-white ; fore-arms black ; legs black ; the arms and thighs of the same colour as the back ; upper side of the tail beyond the basal region, and its terminal portion, black ; hands and feet black.

As Dr. Sclater has pointed out (*loc. cit.*) : "It is at once distinguishable from *C. petaurista* by the black fore-limbs and feet, by the greenish colour on the tail above ; the greenish cheeks, without any white stripe beneath the ears, and the bluish skin of the face."

Distribution.—Martin's Guenon is generally brought to Europe from the island of Fernando Po, where it is probably indigenous. It may also inhabit the neighbouring coast of Western Africa.

VI. THE LUDIO GUENON. *CERCOPITHECUS LUDIO*.

Cercopithecus ludio, Gray, P. Z. S., 1849, p. 8, pl. ix., fig. 1 ; id., P. Z. S., 1868, p. 182 ; id., Cat. Monkeys Brit. Mus., p. 21 (1870), Wagner, in Schreb., Säugeth. Suppl., v., p. 51 (1855) ; Sclater, P. Z. S., 1893, p. 245.

Cercopithecus ascanias, Schl., Mus. Pays-Bas, vii., p. 87 (1876).

Characters.—Spot on lower half of nose large, oblong, higher than broad. General colour of fur black or dark greenish-olive, minutely speckled with greyish-yellow. Face and lips blackish-blue, the nose-spot white ; ridge of nose above the white spot, superciliary band, crown of head, shoulders and fore-limbs, black ; outer and inner aspects of hind-limbs and extremity of tail black ; chin, chest, inner side of the upper part of the arms, and under side of body, whitish ;

whiskers black ; rump and under side of the base of the tail rufous.

Distinguished from *C. petaurista* by its black limbs, reddish rump and base of tail.

Distribution.—West Africa : Cameroons and the Delta of the Niger.

VII. THE BLACK-CHEEKED GUENON. CERCOPITHECUS

MELANOGENYS.

Cercopithecus melanogenys, Gray, Ann. and Mag. Nat. Hist., xvi., p. 212 (1845); id., P. Z. S., 1849, p. 7, pl. ix., fig. 2 ; id., P. Z. S., 1868, p. 182 ; id., Cat. Monkeys Brit. Mus., p. 21 (1870); Scl., P. Z. S., 1860, p. 246 ; Monteiro, P. Z. S., 1860, p. 112 ; Jentink, Notes, Leyden Mus., x., p. 11 (1888); Sclater, P. Z. S., 1893, p. 245.

Cercopithecus picturatus, Santos, Journ. Sci. Lisb., xi., p. 98 (1886).

Characters.—The white nose-spot cordate in shape ; a band across the forehead above the eyes passing backwards over the ears, and over the lower cheeks, black ; region between the eye and the ear whitish ; back finely grizzled with black and orange ; centre of the back washed with deep rufous ; outside of the legs dark grey, becoming black on the hands and feet ; tail dark rufous. Length of body, $15\frac{3}{4}$ inches ; tail, about 17 inches.

The black lower cheeks, and the white region between the eye and the ear distinguish *C. melanogenys* from *C. nictitans* and *C. stampflii*.

Distribution.—West Africa : Angola. "It is very abundant at Encôge, three days' journey to the south of Bamba." (*Monteiro*.)

VIII. STAMPFLI'S GUENON. CERCOPITHECUS STAMPFLII.

Cercopithecus melanogenys, Schl., Mus. Pays-Bas, vii., p. 90
(1876, nec Gray).

Cercopithecus stampflii, Jentink, Notes, Leyden Mus., x., p. 10
(1888); Sclater, P. Z. S., 1893, p. 257.

Characters.—Nose-spot white, with its broader part lowest, and the point upwards; crown of head, nape of neck, legs and hinder portion of tail black; spot on lower lip black; chin, breast, anterior portion of belly, and inside of fore-arms white; forehead, cheeks, back, sides of body, and the basal portion of the tail, rufous-green, the hairs being ringed with black and rufous-yellow. Length of body, $25\frac{1}{4}$ inches; tail, $38\frac{1}{2}$ inches.

Distinguished from *C. nictitans* by its white under surface.

Distribution.—West Africa: Liberia. Obtained in the Pessi country by Messrs. Büttikofer and Stampfli.

IX. SCHMIDT'S GUENON. CERCOPITHECUS SCHMIDTI.

Cercopithecus ascanias (?), Scl., P. Z. S., 1887, p. 502.

Cercopithecus schmidti, Matschie, Zool. Anz., p. 161 (1892);
Sclater, P. Z. S., 1893, p. 245, pl. xvi.

Characters.—Closely allied to *C. melanogenys*, the white nose-spot cordate. Face and superciliary region blue; nose above the white spot black; a bar between the nose-spot, reaching to the whiskers, on each side, black; upper and lower lips flesh-coloured; whiskers white, conspicuous, and with a very narrow black streak on their lower edge; beard white; above the superciliary region, and between the flesh-coloured ears, a black frontal bar; top of head, back, outer aspect of arms, thighs, and of the basal third of tail, olive-green and more

punctulated than in *C. melanogenys*; throat, under side of body, and inner side of the upper part of the limbs, white; fore-arms, hands, legs, and feet black; posterior two-thirds of tail rufous.

Distribution.—This species was obtained by the Rev. W. C. Willoughby, in 1883, at Uniamwezi, in Eastern Equatorial Africa, and was said to have been brought thither from the Manyuema country, on the western shore of Lake Tanganyika. His specimen lived in the Zoological Gardens in London for nearly three years. It has also been obtained in Uganda, further to the north.

X. THE HOCHUR GUENON. *CERCOPITHECUS NICTITANS*.

Simia nictitans, Linn., Syst. Nat., i., p. 40 (1766).

Cercopithecus nictitans, Erxl., Syst. Règne Anim., p. 35 (1777); Martin, Mammif. An., p. 536 (1841); Wagner, in Schreber's Säugeth. Suppl., v., p. 50 (1855); Gray, P. Z. S., 1868, p. 182; id., Cat. Monkeys Brit. Mus., p. 21 (1870); Schl., Mus. Pays-Bas, vii., p. 89 (1876); Schl., P. Z. S., 1893, p. 246.

Cercopithecus nictitans (Hocheur), F. Cuvier, Hist. Nat., Mamm. i., pl. 17 (1825); Audebert, Hist. Nat. des Singes, Fam. iv., Sect. i., p. 9, pl. 2.

Characters.—Head round; forehead elevated; face depressed; nose broad, short-haired. "Hair of the head very full; boldly over-reaching the eyes, obscuring the ears, and adding to the breadth and elevation of the top of the head." (*Martin*.) Nose-spot narrow above, commencing between the eyes, broad below; the lips and a broad ring round the eyes, nude, or very short-haired, elsewhere haired; whiskers bushy; callosities covered with hair; thumbs very short; muzzle shorter than is

usually the case in the genus ; no beard ; tail long, thinly-haired, tapering.

General colour all over, black, speckled with white or yellowish, the hairs being grey at their roots, then black, tipped with white or yellowish-white ; face purplish-black ; nose-spot pure white ; no white on the lips ; ears black ; no black stripes on the face, a character distinguishing it from all the other spotted-nosed Monkeys ; under surface of body and basal part of tail blackish-grey, the inside of the limbs less distinctly so.

Some specimens are not so black, but are greyer, especially on the under side, which may be washed with brown.

The white colour of the nose not extending on to the upper lip distinguishes this species from *C. petaurista*, independently of the general colouring.

Distribution.—West Africa. Although the “Hocheur” is not uncommon in European menageries, it is still uncertain in exactly what part of that extensive region it has its home.

Habits.—Nothing is known of the habits of this species, except what has been observed from examples living in captivity. In durance the species is mild and gentle in disposition, and very active, and has a way of incessantly shaking its head, a habit from which it derives its French appellation of “Hocheur.”

XI. THE RED-EARED GUENON. *CERCOPITHECUS ERYTHROTIS*.

Cercopithecus erythrotis, Waterh., P. Z. S., 1838, p. 59 ; 1841, p. 71 ; Martin, Mammif. An., p. 535 (1841) ; Fraser, Zool. Typ., pl. iv. (1848) ; Wagn., in Schreb. Säugeth. Suppl., v., p. 49 (1855) ; Gray, P. Z. S., 1868, p. 182 ; id., Cat. Monkeys Brit. Mus., p. 21 (1870) ; Schlegel, Mus. Pays-Bas, vii., p. 70 (1876) ; Scl., P. Z. S., 1884, p. 176, 1893, p. 246.

Characters.—General colour of back, sides, and outer aspect of the hind-limbs, black, speckled with yellowish-grey, or with golden-yellow on the hinder part of the back—the hairs being black, ringed with yellow or gold respectively; face nearly nude, except for a few short hairs on the upper part of the nose; region round the eyes, livid blue; nose red; chin white; a black bar from the eye to the ear; below this a broad white whisker-streak on the cheeks, beneath which again there arises from the corner of the mouth and cheeks another black, yellow-ringed, tuft of hair; ears rusty-red internally; external aspect of the fore-limbs blackish; throat, under surface of the body, and inner side of the limbs greyish-white; tail bright rufous, except for a dark line along its upper surface; anal hairs bright red. Length of body, 17 inches; tail, 23 inches.

Distribution.—This rare and very beautiful Monkey has its home in the island of Fernando Po.

XII. THE MOUSTACHED GUENON. *CERCOPITHECUS CEPHUS*.

Simia cephus, Linn., Syst. Nat., i., p. 39 (1766).

Cercopithecus cephus (Moustac), F. Cuvier, Hist. Nat., Mamm., i., livr. xxvi. (1821); Martin, Mammif. An., p. 532 (1841); Wagner, in Schreber's Säugeth. Suppl., v., p. 49 (1855); Gray, P. Z. S., 1868, p. 182; id., Cat. Monkeys Brit. Mus., p. 20 (1870); Schleg., Mus. Pays-Bas, vii., p. 91 (1876); Schl., P. Z. S., 1893, p. 246.

Le moustac, Audebert, Hist. Nat. Singes, Fam. iv., Sect. ii., p. 19, fig. xii.

Characters.—Face and nose naked; muzzle short; whiskers thick and bushy, directed backward and downward. Face, except the lips, violet-blue; margin of the upper lip black, this

colour extending as a bar back to the whiskers ; between this black margin and the nose is a white bar, extending also across the cheek to the whiskers ; under lip and chin, black ; whiskers between the eyes and ears golden-yellow, paler below the ears, and white on the under jaw ; ears black, with yellowish-white hairs. Head greenish, darker on the back than on the front ; the neck, back, shoulders, outer side of arms, flanks, buttocks, and upper side of the base of the tail greenish-brown—the hairs being grey at their roots and ringed above with yellow and black, or brown, the predominance of the one or the other producing the brown, or brighter or fainter green colour ; on the outer side of the thighs, the green hue is deeper. The rest of the outer aspect of the limbs is grey washed with yellow ; hands and feet dusky brown or dull black ; under side of the body and inside of the limbs dark grey, lighter on the throat, breast, and fore part of the belly ; under side of the base of the tail dark grey ; the remaining two-thirds rufous. Length of body, 19 inches ; of tail, 26 inches.

Distribution.—West Africa : from Gaboon to the Congo.

Habits.—This species is not at all uncommon in menageries. Numerous specimens have from time to time been exhibited in the Zoological Gardens in London. Little is known, however, of the habits of the Moustached Monkey in its native forests. In captivity it is intelligent, lively, and good-tempered, but very shy. Its delicate constitution cannot resist the rigours of our climate for any length of time.

II. CERCOPITHECI CHLORONOTI.

In this section of the Guenons, the fur is more or less olive-green above ; the under side and whiskers white, and the arms and legs grey.

XIII. THE MALBROUCK GUENON. *CERCOPITHECUS CYNOSURUS*.

Simia cynosurus, Scop. Delic. Flor. et Faun. Insubr., i., p. 44, pl. xix. (1786).

Cercopithecus cynosurus (Malbrouck), F. Cuvier, Hist. Nat., Mamm., i., livr. ii. (Janvier, 1819); Desmarest, Mamm. p. 60 (1820); Martin, Mammif. An., p. 515 (1841); Geoffr., Dict. d'Hist. Nat., iii., p. 306 (1849); Wagner, in Schreber's Säugeth. Suppl., v., p. 38 (1855); Schleg. Mus. Pays-Bas, vii., p. 72 (1876); Sclater, P. Z. S., 1893, p. 247.

Cercopithecus tephrops, Bennett, P. Z. S., 1833, p. 109.

Chlorocebus cynosurus, Gray, Cat. Monkeys Brit. Mus., p. 26 (1870).

Characters.—Head broad, and rounded above; muzzle thick. Face naked, flesh-coloured; nose and cheeks black-haired; ears nude, black; hands short, thumbs rudimentary; hairs on the side of the head not forming whiskers. Top of head and upper surface of body olive-green—the hairs being grey at their roots and ringed with black and yellow; external surface of the fore-arms and legs grizzled-grey, the hairs with black and white rings; sides of the neck, under surface of the body, inside of the limbs, and the under side of the tail white; an indistinct band across the forehead over the eyes, white; tail dark grey above; callosities scarlet; scrotal region in the male deep blue; hairs beneath the tail and round the scrotal region rufous. Length of body about 18 inches; tail, 16 inches.

Distribution.—West Africa. Probably Senegambia, but the exact habitat still unknown.

Habits.—Of the habits of the Malbrouck in its own home nothing has been recorded; but Mr. Martin remarks that in captivity it combines in its disposition a certain degree of slug-

gishness with a savage and vindictive temper. One of the specimens, he says, "in the menagerie of the Zoological Society, an adult male, was gentle, familiar, and pleased to be noticed or caressed; but, at the same time, it was neither lively nor playful. The other was deceitful, and though apparently calm, very suspicious; it was roused by the slightest provocation to anger, and would turn upon its disturber with the utmost malevolence depicted in its countenance, making every possible effort to assault him, exhibiting its teeth and gazing fixedly in his face. . . . On the whole, indolence and ferocity form the character of the adult, at least, in captivity."

XIV. THE GRIVET GUENON. *CERCOPITHECUS SABÆUS*.

Simia sabæa, Linn., Syst. Nat., i., p. 38 (1766).

Cercopithecus griseus (Le Grivet), F. Cuvier, Mamm., i., livr. vii. (Juin, 1819).

Cercopithecus griseo-viridis, Desmarest, Mamm., p. 61 (1820); Martin, Mammif. An., p. 518 (1841); Rüppell, Neue Wirbelth. Säugeth., p. 8 (1835); Blanford, Zool. Abyss. Exp., p. 224 (1870); Sclater, P. Z. S., 1893, p. 248.

Cercopithecus sabæus, Geoffr., Cat. Méth. Primates, p. 22 (1851); Schleg., Mus. Pays-Bas, vii., p. 74 (1876).

Chlorocebus enythythea, Gray, Cat. Monkeys Brit. Mus., p. 26 (1870).

Characters.—Head more pyramidal than in *C. cynosurus*, and the muzzle thinner; an angular patch of hair at the corner of each eye, pointing backwards; whiskers forming long and thick ear-tufts, directed backwards and partly concealing the ears; ears small; hands short and small. Face, ears, and lips dark

violet ; region round the eyes livid flesh-colour ; the superciliary band joining the whiskers white ; top of the head, back as far as the rump, shoulders and arms greyish olive-green—the hairs ringed with greyish-black and pale yellow ; whiskers, chin, breast, under surface of body, fore part of shoulders, the inner side of the limbs, and the under side of the tail, white ; fore-arms, rump, and thighs grey, slightly washed with olive ; hands and feet entirely grey ; upper side of the tail greyish-black, the tip paler. Scrotal region coppery-green, covered with orange hairs.

Distinguished from the Malbrouck by the form of the head, the greyer shade of the hair, and the colour of the scrotal region ; and from *C. callitrichus*, described below, by the more sombre colour of its hair, the white superciliary band, and the long white whiskers. Length of body, about 19 inches ; tail, 22 inches.

Distribution.—North-east Africa : throughout Abyssinia, Senaar, and Kordofan, up to 4,000 feet.

Habits.—According to Dr. Blanford, this species is a true tree Monkey, and is very rarely seen except in the forest. "On the highlands of Abyssinia," he says, "I only once saw a flock—this was near Dildi, south of Lake Ashangi. I met with larger flocks on the Anseba, where they inhabited the high trees on the banks of the stream. The flocks seen were small, not exceeding twenty to thirty individuals. I had but few opportunities of observing their habits, but they appeared to differ but little from those of *Macacus* or *Inuus*, except that *Cercopithecus* is a quieter animal and less mischievous. In captivity they are well known as excessively docile and good tempered, and fairly intelligent."

XV. WERNER'S GUENON. *CERCOPITHECUS WERNERI*.

Cercopithecus werneri, Geoffr., C. R., xxxi., p. 874 (1850); id., Arch. Mus., v., p. 539, pl. xxvii. (1851); Wagner, in Schreb. Säugeth. Suppl., v., p. 42 (1855); Sclater, P. Z. S., 1893, p. 258.

Characters.—Nearly related to *C. sabæus*, but all the parts are olive-green where that species is greyish-green—the hairs being ringed with reddish-fawn and black; the former taking the place of the green rings in the hairs of the *C. sabæus*, and the black ones being much broader; the face black; the tail yellow at the tip as in *C. sabæus*.

Distribution.—The exact habitat of this species is unknown.

XVI. THE GREEN GUENON. *CERCOPITHECUS CALLITRICHUS*.
(Plate XXVIII.)

Singe Verte, Adanson, Voy. Sénégal., p. 178 (1735).

Cercopithecus sabæa (nec Linn.), Erxleb., Syst. Regne An., p. 33 (1777).

Cercopithecus sabæus, Wagner in Schreb. Säugeth., v., p. 40 (1855); Martin, Mammif. An., p. 519 (1841).

Le Callitriche, F. Cuv., Hist. Nat., Mamm., i., livr. iv. (Mars, 1819).

Simia sabæa, Audebert, Singes, Fam. iv., Sect., ii., p. 7, fig. iv. (1797).

Cercopithecus callitrichus, Is. Geoffr., Cat. Méth. Primates, p. 23 (1851); Schleg, Mus. Pays-Bas, vii., p. 73 (1876); Sclater, P. Z. S., 1866, p. 79; 1893, pp. 248, 616.

Chlorocebus sabæus, Gray, Cat. Monkeys Brit. Mus., p. 25 (1870).

Characters.—Muzzle rather long; ears large, naked, and somewhat pointed behind; hairs on the side of the head long,



GREEN GUENON.

thick, frill-like, and directed backwards toward the ears ; hands and feet long, but the feet longer than the hands. Face, ears, palms, and soles, black ; superciliary band bright yellow or white ; head, back, shoulders, arms, and upper part of the fore-arms, the thighs, upper part of the legs, and upper side of the tail rich yellowish-green,—the hairs being ringed with broader bars of yellow, and narrower bars of black ; external surface of the lower part of the fore- and hind-limbs grey, the hairs being ringed with white, or very pale yellow and black ; cheeks, throat, under surface of the body, and inner side of the limbs, white, washed with yellow on the cheeks, throat, and along the mid-line of the belly. Tail tipped with a long tuft of bright yellow ; under side of the tail greyish-green ; hairs beneath the tail and on the scrotal region bright yellow ; naked skin of the scrotal parts, green. Length of body, 24 inches ; of tail, 29 inches.

Distribution.—West Africa : from Senegambia to the Niger. It is said to be now abundant in a wild state in the island of St. Kitts, in the West Indies, and Colonel Feilden identified it in Barbadoes. Into both of these islands it has been introduced from Africa, in the same way as into St. Jago, one of the Cape Verde Islands

Habits.—The Green Monkeys frequent high trees in the great forests, living in small troops or sitting alone. They move about very noiselessly, and would seem to be devoid of voice, remaining silent even when attacked or wounded ; although they knit their brows, gnash their teeth, and evince every sign of vexation and anger. This species is one of the commonest Monkeys introduced into Europe, as it appears to be able to stand, better than most of the other members of the genus, the northern climate. It has even bred in the Zoological

Gardens in London. It is very active and intelligent, and when young it is gentle and of a good disposition, but as it grows older it becomes treacherous, malicious, and savage.

XVII. THE VERVET GUENON. *CERCOPITHECUS PYGERYTHRUS*.

Cercopithecus pygerythra (Le Vervet), F. Cuvier, Hist. Nat. Mamm., iii., livr. xxiv. (Janvier, 1821).

Cercopithecus pygerithræus, Desmarest, Mamm., Suppl., p. 534 (1820).

Cercopithecus pygerythrus, Lesson, Spec. des Mamm. Bimanes et Quadrum., p. 83 (1840); Geoffr., Dict. Hist. Nat., iii., p. 305 (1849); id., Cat. Méth. Primates, p. 21 (1851); Wagner, in Schreb. Säugeth., v., p. 39 (1855); Peters, Reis. Mossamb. Säugeth., p. 4; Martin, Mammif. An., p. 521 (1841); Schl., Mus. Pays Bas, vii., p. 76 (1876); Thomas, P. Z. S., 1885, p. 219; H. H. Johnston, Kilimanjaro Exped., p. 352 (1886); Scl., P. Z. S., 1893, p. 249 (nec Martin, nec Schl.).

Cercopithecus pusillus, Delalande in Desmoul, Dict. Class., vii., p. 568.

Cercopithecus lalandii, Geoffr., Dict. d'Hist. Nat., iii., p. 305 (1849); Wagner, in Schreber's Säugeth., v., p. 39 (1855); Sclater, P. Z. S., 1893, pp. 248 and 615.

Cercopithecus rufo-viridis, Is. Geoffr., C. R., xv., p. 1038 (1842); Scl., P. Z. S., 1860, p. 420.

Chlorocebus pygerythrus, Gray, Cat. Monkeys Brit. Mus, p. 25 (1870).

Characters.—Very nearly allied to the Grivet (*C. sabæus*), to the Malbrouck (*C. cynosurus*), and to the last species, the Green Guenon. Distinguished from the Grivet by the chin, the hands and the feet, beyond the ankle, and the wrist being very black, instead of grey; and the tip of the tail (or its

entire length) black, instead of being grey or yellow, as in the Malbrouck. It differs from both the Malbrouck and Grivet in having, according to Martin, long coarse fur, greyer in tint above, with a slighter wash of olive (= *C. lalandii* of Geoffroy); or in being more reddish-yellow or yellowish-green above (the true *C. pygerythrus*); also by having conspicuous superciliary bristles. The less thick and heavy muzzle and the green scrotal region distinguish it from the Malbrouck; the rust-red coloured hair on the space below the root of the tail distinguishes it from the Grivet. Length of body, 22 inches; tail, 27 inches.

The female is slightly smaller than the male.

Distribution.—South Africa: Cape Colony. “The Vervet is common in the forests along the Great Fish river, and other streams between Algoa Bay and Cape Town. Its range extends also along the Natal coast, throughout the Amakozi country, and Caffreland generally.” (*Martin*.) Zambesia. On Kilimanjaro. Mr. H. H. Johnston observed it to be common, at 5,000 feet, in the cultivated gardens round the village of Moshi, and in the forests lower down, at Taveita.

Habits.—Their food consists of fruits, and particularly of the gum which exudes from various species of *Acacia*. In confinement, when irritated, they utter, it is said, a barking noise, display their teeth, and gaze with hatred in their eyes. They are very treacherous, ferocious, and daring, and their cage requires to be approached with much precaution. Mr. Johnston, when living on the slopes of Kilimanjaro, found them to be exceedingly familiar and mischievous, and given to stealing fruits, &c. They are entirely without the fear of Man.

This Monkey is very commonly to be seen alive in European

menageries, where it appears to stand the northern climate fairly well. At a meeting of the Zoological Society in November, 1893, Dr. Sclater remarked that *Cercopithecus callitrichus* (= *C. pygerythrus*) had recently bred in the Gardens. Concerning the latter birth a curious fact had been observed and reported by the keepers—that the young Monkey, which lived about two months, had been in the habit of sucking both of the mother's teats at once.

XVIII. THE TANTALUS GUENON. CERCOPITHECUS TANTALUS.

Cercopithecus tantalus, Ogilby, P. Z. S., 1841, p. 33; Sclater, P. Z. S., 1893, p. 258; Schl., Mus. Pays-Bas, vii., p. 73 (1876).

Cercocobus tantalus, var. f., Gray, Cat. Monkeys Brit. Mus., p. 26 (1870).

Characters.—Head rounder and face shorter than in *C. callitrichus*. Face covered with very short hairs; nose prominent, and narrow between the eyes, flatter and broader towards the tip. Head, back, and sides, a mixture of yellowish-brown and green, of the same shade as prevails in the upper parts of *C. callitrichus* and *C. pygerythrus*; outer surface of the limbs clearer ashy-grey; whiskers, throat, breast, under side of the body, and inner side of the limbs, yellowish-white; tail brown at the root, pale grey at the tip; back of hands and feet light grey; face livid flesh-colour round the eyes, the short hairs on the nose and cheeks black; lips light brown; eyebrows black, surmounted by a broad white band across the forehead; scrotal region covered with yellowish hairs. (*Ogilby.*)

Distribution.—Africa, but the exact habitat is unknown.

Habits.—Unknown.

III. CERCOPITHECI ERYTHRONOTI.

The next three species constitute the red-furred group of Geoffroy and Sclater, being bright rufous above, and white beneath.

XIX. THE PATAS GUENON. CERCOPITHECUS PATAS.

Simia patas, Schreber, Säugeth., i., p. 98, pl. xvi. (1775).

Cercopithecus patas, Erxleb. Syst. Règne An., p. 34 (1777); Schleg., Mus. Pays-Bas, vii., p. 84 (1876); Scl., P. Z. S., 1893, p. 249.

Simia rubra, Gm., Syst. Nat., i., p. 34 (1788); Fischer, Synops. Mamm., p. 24 (1829).

Cercopithecus ruber, Geoffr., Ann. Mus., xix., p. 96 (1812); id., Dict. d'Hist. Nat., iii., p. 307 (1849); Desmar. Mamm., p. 59 (1820); Martin, Mammif. An., p. 509 (1841, pt.); Wagner, in Schreber, Säugeth. Suppl., v., p. 42 (1855); Scl., P. Z. S., 1874, p. 664.

Le Patas et Le Patas à bandeau noir, F. Cuvier, Hist. Mamm. i., livr. xv. (Avril, 1820).

Chlorocebus ruber, Gray, Cat. Monkeys Brit. Mus., p. 25 (1870).

Characters.—Head broad and flattened; nose depressed; muzzle short; fur long and silky on the back of the head, elsewhere short. Orbits narrow; cheeks and muzzle naked; whiskers thick and bushy, encroaching far on the cheeks, and extending back below the ears; chin with a few hairs, but no beard. Head, back, sides, and hinder aspect of the arms and fore-arms, and of the thighs and legs, and of the upper and lower sides of the base, and the upper side of the rest of the tail, foxy red; shoulders, chest, front and rest of the forelimbs, entire under side of the body, and of the terminal portion

of the tail, and inner side of the limbs, with the entire hands and feet, grey or greyish-white,—the hairs being ringed with black and white. The nude parts of the face and of the ears, hands, and feet, violet flesh-colour; a distinct superciliary arch black; a white bar from the eye to behind the ear; a black line from the superciliary stripe, extending down the nose-ridge and expanding on the tip; on the upper lip, a short moustache of black hairs; whiskers greyish-white, washed with yellow. This species varies considerably in size and in coloration.

In young animals the grey is often washed with rufous.

Distribution.—West Africa: Senegal.

Habits.—The Patas in its native forest lives in large troops, which unite together, as De la Brue has recorded, against a common enemy. He relates that as he passed along a river in his boat, the Patas came down to the tips of the branches out of curiosity, but after watching the party for a time they threw dry branches and other handy objects at them, till some of their number were at last shot. This so infuriated the survivors, that they redoubled their attack with stones and other missiles, giving utterance meanwhile to the most frightful cries. Mr. Martin, from whom we have condensed De la Brue's account, says that this species is lively in captivity, but very spiteful and capricious, its temper becoming worse with age.

XX. THE NISNAS GUENON. *CERCOPITHECUS PYRRHONOTUS*.

Cercopithecus pyrrhonotus, Hempr. et Ehrenb., Symb. Phys., pl. x. (1838); Geoffr., Dict. Hist. Nat., iii., p. 307 (1849); Wagner, in Schreber's Säugeth., v., p. 42 (1855); Sclater, P. Z. S., 1871, p. 623; 1893, p. 250; Schl., Mus. Pays-Bas, vii., p. 84 (1876).

Cercopithecus ruber, Rüpp., Neue Wirb. Säugeth., p. 8 (1835);

Martin, Mammif. An., p. 509 (1841) (in part).

Le Nisnas, F. Cuvier, Hist. Nat. Mamm., i., pl. 27 (1830).

Chlorocebus ruber, Gray, Cat. Monkeys Brit. Mus., p. 25 (1870).

Characters.—Of the same size as *C. patas*, and very similar to it. Fur above, and on the lower part of the limbs rufous, and on the lower part of the back, and under side of the tail, much darker rufous than elsewhere; nose white, not black as in the preceding species; shoulders and external aspect of arms rufous like the rest of the body, and not grey as in *C. patas*.

Distribution.—North-east Africa: Kordofan and Darfur, to a height of 3,000 feet above the sea. A specimen living in the Zoological Gardens in 1882 was stated to have come from Somali-land.

Allied to the Patas and the Nisnas is Peters' Guenon (*Cercopithecus ochraceus*, Peters, Reis. Mossamb. Säugeth., p. 2, pl. 1a), from Querimba, Mozambique, which has the upper side yellowish, and is probably but a variety of *C. pyrrhonotus*.

XXI. THE REDDISH-GREEN GUENON. CERCOPITHECUS RUFO-VIRIDIS.

Cercopithecus rufo-viridis, Geoffr., C. R., xv., p. 1038 (1842);

id. Dict. Hist. Nat., iii., p. 307 (1849); Schl., Mus. Pays-

Bas, vii., p. 78 (1876); Scl., P. Z. S., 1893, p. 258.

Chlorocebus rufo-viridis, Gray, Cat. Monkeys Brit. Mus., p. 25 (1870).

? *Cercopithecus flavidus*, Peters, Reis. Mossamb., p. 3, pl. i.b.

Characters.—Face black; a large frontal band white; head above olive-green; back green washed with rufous, gradually becoming bright rufous, slightly speckled with black on the sides

of the body between the fore- and hind-limbs ; shoulders and thighs grey, washed with green ; the rest of the external aspect of the limbs grey ; under side of body and inner side of limbs white ; hands speckled black ; the feet greyish ; tail, dark grey above, pale grey below.

Distribution and Habits.—Unknown. The form described by Peters as *C. flavidus* comes from Mozambique.

IV. CERCOPITHECI MELANOCHIRI.

The species which we now proceed to describe belong to Prof. Schlegel's Section v., and Dr. Sclater's *Cercopithecus melano-chiri*, of which the members have the arms and legs either black or dark grey, and have a black band from the outer corner of the eyes to the ears.

XXII. THE MONA GUENON. CERCOPITHECUS MONA.

Simia mona, Schreber, Säugeth., i., p. 97, pl. xv. (1775).

Cercopithecus mona, Erxleb. Syst. Regne An., p. 32 (1777) ;

Geoffr., Dict. Hist. Nat., p. 304 (1849) ; Martin, Mammif.

An., p. 527 (1841) ; Wagner, in Schreb. Säugeth. Suppl.,

v., p. 47 (1855) ; Gray, Cat. Monkeys Brit. Mus., p. 22

(1870) ; Schleg., Mus. Pays-Bas, vii., p. 80 (1876)

Sclater, P. Z. S., 1893, p. 250.

La mone, F. Cuvier, Hist. Nat. Mamm., i., livr. ix. (Août, 1819).

Characters.—Top of the head brilliant golden-green, the hairs being black at the roots, yellow further up and tipped with black ; back, sides of body, shoulders, and haunches chestnut-brown, speckled with black,—the hairs being grey at the base, ringed alternately with red, or brown and black ; frontal band pale greenish ; rump, with the exception of a distinctive elliptical white bar on each side, at the base of the tail, black ; the hands and feet, and external aspect of the legs,

thighs, and fore-arms, black ; the under side of the body and inner side of the limbs pure white, separated by an abrupt line from the colours of the outer surfaces ; the transverse black band above the eyebrows extending from the outer corner of the eyes to the ears ; nude parts of face, ears, and hands livid flesh-colour ; the whiskers bushy, covering much of the cheeks, descending on the sides and lower part of the neck, pale yellow, speckled with black marks.

The white bars on each side of the tail, on the rump, and the white frontal band distinguish this species from all others.

Distribution.—West Africa : Cameroons.

XXIII. SYKES' GUENON. *CERCOPITHECUS ALBIGULARIS*.

Semnopithecus ? albogularis, Sykes, P. Z. S., 1831, p. 106.

Cercopithecus albigularis, Sykes, P. Z. S., 1832, p. 18 ; Owen, P. Z. S., 1832, p. 18 (anatomy) ; Martin, Mamm. An., p. 512 (1841) ; Frazer, Zool. Typ., pl. ii. (1848) ; Wagner in Schreb. Säugeth. Suppl., v., p., 45 (1855) ; Gray, Cat. Monkeys Brit. Mus., p. 24 (1870) ; Schleg., Mus. Pays-Bas, vii., p. 79 (1876) ; True. Pr. U. S. Nat. Mus., xv., p. 448 (1893) ; Sclater, P. Z. S., 1893, p. 251 ; Matschie, S.B., Nat. Fr. Berl., 1893, p. 215 ; Thomas, P. Z. S., 1894, p. 137.

Cercopithecus erythrarchus, Peters., Reis. Mossamb. Säugeth., p. 1., pl. i. ; Schl., Mus. Pays Bas, vii., p. 77 (1876) ; Kirk, P. Z. S., 1864, p. 649 ; Reuvens, Zool. Gart., xxx., p. 207 (1889) ; Oudem, *op. cit.*, xxxi., p. 267 (1890) ; Scl., P. Z. S., 1893, p. 249 (female).

? *Cercopithecus monoides*, Geoffr., Arch. du Mus., ii., p. 558, pl. 31 (1841) ; id., C. R., xv., p. 1038 (1842) ; id., Dict. Hist. Nat., iii., p. 303 (1849) ; Scl., P. Z. S., 1893, p. 256.

Characters.—**Male.**—Head rounded, short; ears small, rounded, and nearly concealed in the long fur of the head; eyes deep-set; superciliary hairs long; whiskers thick and bushy; no beard; facial angle large; cheek-pouches small but distinct, not observable even when filled, being concealed by the bushy whiskers; thumbs short; great-toes long; very small callosities; tail half as long as the body. Larynx with the usual two wide lateral sacs and a middle pouch extending forward about three inches under the skin of the neck, communicating with the larynx by a large opening.

Entire upper surface black, mixed with yellow,—the hairs being black, ringed with brownish-yellow bars. Face, cheeks, and lips black; shoulders, fore-limbs and hind-limbs (washed with yellowish), black, from the absence of the yellow bars, which predominate on the back and sides; under side of the body black, speckled with white; chin and throat white; no white thigh patches; tail, black.

Female.—Differs from the male in being smaller, and in having the rump, the upper and lower sides of the base of the tail, the region round the anus, and the posterior aspect of the upper part of the thighs and arms strongly tinged with reddish-brown. The lower side of the body and inner sides of the limbs whitish—the hairs towards their extremities being ringed with black and greyish-yellow. It has been described as *Cercopithecus erythrarchus* of Peters and other writers.

Distribution.—West Africa: Gold Coast (*Pel*); also said to have been obtained on the Congo. East Africa: Mozambique; believed to abound about Cape Corrientes (*Peters*). Quillimane and the Lower Zambesi are further given as habitats both by Dr. Peters and Sir J. Kirk. Mr. H. H. Johnston, H.M. Com-



BOUTOURLINI'S GUENON.

missioner in Nyasa Land, has sent it from the Milanji Plateau where it ranges from 3,000 to 6,000 feet above the sea. This species was at one time supposed, but quite erroneously, to come from Madagascar.

Habits.—This Monkey is very frequently brought alive to Europe, and almost all that we know of its habits has been obtained from observing it in captivity. Colonel Sykes, who first brought this species to England and described it, says that “its manners in captivity are grave and sedate. Its disposition is gentle, but not affectionate ; and though free from that capricious petulance and mischievous irascibility characteristic of so many of the African species, still it quickly resents irritating treatment, and evinces its resentment by very smart blows with its anterior hands. It never bit any person on board ship, but so seriously lacerated three Monkeys, its fellow passengers, that two of them died from the wounds. It readily ate meat, and would choose to pick a bone even when plentifully supplied with vegetables and dried fruits.” Another individual, seen by Mr. Ogilby, exhibited the same antipathy to other Monkeys.

XXIV. BOUTOURLINI'S GUENON. *CERCOPITHECUS BOUTOURLINII*.
(Plate *XXIX.*)

Cercopithecus boutourlinii, Giglioli, Zool. Anz., x., p. 510
(1887); Scl., P. Z. S., 1893, pp. 256, 441.

Cercopithecus albigularis, Giglioli, Ann. Mus. Genov. (2), vi.,
p. 8 (1888).

Characters.—**Male.**—Body-hairs long and rough ; upper surface black, with pale fulvous annellations, except on a line between the shoulders, which is nearly black ; ears nearly nude, with an inner hairy pencil ; nose, upper lip, chin, and throat, pure white ; rest of the under surface and of the limbs and tail black,

except the base of the tail, which has ringed hairs like the back all round. Length of body, 21 inches; of tail, 24 inches. (*Sclater.*)

Female.—Nearly similar, but smaller, and having the hairs less ringed on the back and the head. (*Sclater.*)

Distinguished from *C. albigularis* by its white nose and upper lips, black under surface, and blacker limbs.

Distribution.—North-east Africa: Kaffa, a province to the south of Shoa; and Gimma, a province in Central Abyssinia, to the south of Gojan.

XXV. CAMPBELL'S GUENON. CERCOPITHECUS CAMPBELLI.

Cercopithecus campbelli, Waterh., P. Z. S., 1838, p. 61; Fraser, Zool. Typ., pl. iii. (1848); Martin, Mammif. An., p. 544 (1841); Wagner in Schreber Säugeth. Suppl., v., p. 47 (1855); Gray, P. Z. S., 1868, p. 182; id., Cat. Monkeys Brit. Mus., p. 24 (1870); Schleg., Mus. Pays-Bas, vii., p. 82 (1876); Jentink, Notes, Leyden Mus., x., p. 9 (1888); Sclater, P. Z. S., 1893, p. 251.

Cercopithecus burnetti, Gray, Ann. N. H., x., p. 256 (1842).

Characters.—Fur long, longer on the hinder part of the back than on the front, separated along the back—the hairs black with broad yellow rings. Face bluish-black; lips flesh-coloured; band across the forehead white, washed with rufous—the hairs tipped with black; head as far as the nape of the neck, yellowish-brown; the fore part of the back brownish-black, the lower part of the back, the outer side of the hind-legs, the fore-legs, and basal third of the tail olive-black, washed with yellow; the long hair on the cheeks and side of the neck, which partly conceals the ears, greyish-white, ringed towards the tips with black and

yellow ; the inner side of the ears furnished with long yellow-flecked grey hairs ; the chest, throat, under side of the body, inner side of limbs and fore part of the thighs white ; posterior two-thirds of the tail yellowish-grey, the hairs ringed with black and faded yellow, those of the under side with brown and grey ; tip of the tail with a small black tuft.

Distribution.—West Africa : from Sierra Leone to the Gold Coast.

Habits.—This is the commonest Monkey, both in the interior and on the coast of this region of Africa. It frequents the moderate-sized trees of the forest in troops of fifty or more in number ; and it occasionally even takes to the water of its own accord.

XXVI. THE SAMANGO GUENON. *CERCOPITHECUS SAMANGO*.

Cercopithecus samango, Sundev. Öfvers. K. Vet.-Akad. Förh. Stockh., i., p. 160 (1844) ; Wagner in Schreber Säugeth. Suppl., v., p. 44 (1855) ; Peters, Reis. Mossamb., Säugeth., p. 4 ; Gray, P. Z. S., 1868, p. 182 ; id, Cat. Monkeys Brit. Mus., p. 24 (1870) ; Schleg., Mus. Pays-Bas, vii., p. 79 (1876 ; in part) ; Scl., P. Z. S., 1893, p. 251.

Characters.—Distinguished by the dirty white tint along the basal half of the tail, except along the median line of the upper side, which is black ; end of the tail black. Back entirely blackish-olive—the hairs being yellowish-olive, ringed with black ; inner side of the limbs, and entire under surface from the arms to the chin, dirty white ; outer surface of the arms black, of the legs grey ; the feet black ; ears covered with whitish hairs.

Distribution—South and East Africa: Natal and Mozambique ; extending to Angola in the west.

XXVII. THE WHITE-LIPPED GUENON. *CERCOPITHECUS*
LABIATUS.

Cercopithecus labiatus, Geoffr., C. R., xv., p. 1038 (1842); id.,
Dict. d'Hist. Nat., iii., p. 302 (1849); Sclater, P. Z. S.,
1893, p. 256.

Cercopithecus samango, Schl., Mus. Pays-Bas, vii., p. 79 (1876;
in part).

Characters.—Fur thick ; a bunch of long hairs directed backwards on the cheeks ; inner aspect of the ears covered with reddish-grey hairs ; upper side of the body dark grey, speckled with pale olive-yellow ; top of the head black, speckled with yellowish-green ; forehead and jaws greenish-yellow, speckled with black ; a black spot on the face above the commissure of the lips ; rest of the lips and region of the mouth white ; outer side of the fore-limbs, hands, and feet black ; outer side of the hind-limbs greyish-brown ; under side of the body faded white ; inner side of the limbs ashy-grey ; round the anus and the greater part of the under side of the tail, pale yellowish-brown ; upper side of the tail, for same distance, reddish-black ; remainder black.

Distribution and Habits.—Unknown.

XXVIII. THE RUMP-SPOTTED GUENON. *CERCOPITHECUS*
OPISTHOSTICTUS.

Cercopithecus opisthostictus, Schl., P. Z. S., 1893, p. 725.

Characters.—Back black, speckled with pale grey ; head darker ; back of the neck, shoulders, external aspect of the hands and feet, and the tail (except at its base), black ; a small spot on the lower back on each side of the tail rufous ; under side blackish. Length of body, 24 inches ; of tail, 25 inches. (*Sclater.*)

Distribution.—British Central Africa : near Lake Mweru.

Habits.—Unknown. The skin of this Monkey is used by the natives to form dresses, and from specimens of these, collected by Mr. A. Sharpe, H.B.M. Vice-Consul in Southern Nyasa Land, during his journey from the north end of Lake Nyasa to Lake Mweru and the Luapula, this species has been described by Dr. P. L. Sclater.

XXIX. STAIRS' GUENON. CERCOPITHECUS STAIRSI.

Cercopithecus stairsi, Sclater, P. Z. S., 1892, p. 580, pl. xl.; 1893, pp. 252, 443, and 612.

Characters.—**Adult Male.**—Face black, except a ring round the eyes, which is flesh-coloured ; ridge of the nose and a band above the eyes from ear to ear black, surmounted by another band of long erect yellowish-white hairs ; ears naked ; whiskers bushy, greyish-white, washed with greenish-yellow ; on each side of the forehead a bright chestnut band is carried over the head behind the ears ; back of the head, nape, and anterior part of the back grey, variegated by black lines and washed with yellowish ; back of the shoulders dark grey ; back, especially the lower part, yellowish-grey, with a rufous patch on the rump above the tail ; external surface of the arms blackish-grey ; hands black ; outside of the legs grey ; feet not so black as the hands ; anal region, and about three inches of the base of the tail rufous-yellow ; scrotum dark indigo blue ; throat, under surface of body, and inner side of limbs milky white ; the whole of the hair of the upper parts minutely grizzled. Length of body, 18 inches ; tail injured. (*Sclater.*)

Young Female.—Differs from the male in being lighter in colour ; back below the nape, sides, thighs, legs, and upper

surface of the basal third of the tail ochre yellow, washed with rufous ; shoulders and fore-limbs grey ; hands and feet black , under side of the body and inner side of the limbs and the throat (where the hairs are long) milky white ; terminal two-thirds of the tail blackish-grey, darker at the tip.

The chestnut auricular spots in both sexes of this species distinguish it from all others.

Distribution.—The Zambesi Delta. The typical specimen (which is the female above described) was given, as Dr. Sclater tells us in his original account of this beautiful species, by Mr. Hillier, at Chindi, to Dr. Moloney (of Lieut. Stairs' Expedition). The latter brought it home alive, and presented it in 1892 to the Zoological Society's Gardens, where it lived till the beginning of 1893. The type specimen is now in the British Museum. A second specimen, the adult male (described above) was presented to the Society in June, 1893, by Mr. F. Hintz, whose brother had brought it from Mozambique, and had had it in captivity for eight years.

Habits.—Unknown.

XXX. MOLONEY'S GUENON. *CERCOPITHECUS MOLONEYI*.

Cercopithecus moloneyi, Sclater, P. Z. S., 1893, p. 252, pl. xvii.

Characters.—Related to *C. samango*, but larger ; hairs long above, olivaceous, speckled with black ; head darker ; a broad band covering the middle and lower back, and the base of the upper side of the tail rufous—the hairs ringed with black ; arms, externally from the shoulders down to the hands, and internally on the lower part of the fore-arm, black ; outer aspect of the thighs and legs blackish-grey, washed posteriorly with yellowish ; tail, except at the very tip, deep black ; the face, lips,

and ears naked, and black ; a fulvous band across the forehead above the eyes ; sides of the head fulvous, speckled with black ; throat, creamy yellow ; under side of body pale fulvous, the hairs ringed with black ; the inside of the arms, thighs, and upper part of the legs greyish fulvous ; feet black. Length of body, 28 inches ; of tail, 26 inches.

Distribution.—British Central Africa. Procured from the natives of N-Konde, and brought from Karonga, at the north end of Lake Nyasa, by Dr. Moloney.

Habits.—Unknown.

XXXI. SCHLEGEL'S GUENON. *CERCOPITHECUS NEGLECTUS*.

Cercopithecus leucocampyx (nec Fischer), Gray, Cat. Monkeys Brit. Mus., p. 22 (1870).

Cercopithecus neglectus, Schlegel, Mus. Pays-Bas, vii., p. 70 (1876) ; Giglioli, Zool. Anz., x., p. 510 (1887) ; Scl., P. Z. S., 1893, p. 253.

Characters.—General colour greyish-brown, finely grizzled ; under side of body black ; crown, outside of limbs and base of tail black ; anterior aspect of thighs and a band across the haunches white.

Distinguished from the true *C. leucampyx* by the colour of the front of the thighs, and by its banded haunch.

Distribution.—The White Nile, where it was obtained by Consul Petherick.

XXXII. THE DIADEM GUENON. *CERCOPITHECUS LEUCAMPYX*.

Simia leucampyx, Fischer, Syn. Mamm., p. 20 (1829).

Le Diane femelle, F. Cuv., Hist. Nat., Mamm., livr. xlii. (June, 1824).

Cercopithecus diadematus, Geoffr. in Bélang., Voy. Zool. p. 51 (1834).

Cercopithecus leucampyx, Martin, Mamm. An., p. 529 (1841); Geoffr., Dict. Univ. Hist. Nat., iii., p. 304 (1849); Schl., Mus. Pays-Bas, vii., p. 83 (1876); Giglioli, Zool. Anz., x., p. 510 (1887); Sclater, P. Z. S., 1893, p. 253 (♀).

Cercopithecus phluto, Gray, P. Z. S., 1848, p. 56, pl. iii.; 1868, p. 182; id., Cat. Monkeys Brit. Mus., p. 23 (1870); Wagner in Schreb. Säugeth. Suppl., v., p. 48 (1855); Sclater, P. Z. S., 1870, p. 670, 1871, p. 36, 1892, p. 97.

Characters.—Face, nose, and lips black; whiskers rounded and bushy; no beard; fur long and harsh; form robust and powerful; whiskers grizzled, the hairs ringed with black and white; across the forehead, over the eyes, a broad white bar (or diadem); the back beyond the shoulders, the sides and haunches, and the posterior aspect of the thighs, grizzly-grey, the hairs ringed with numerous greenish-white and black bars; tail grey at its base, rest black; a few yellowish hairs on the callosities, but all the rest of the body deep black. Length of body, 23 inches; of tail, 21.

Distribution.—West Africa: Angola, and the Congo, to Nyasa Land.

Habits.—Unknown.

V. CERCOPITHECI AURICULATI.

The following three species form the fifth group of the Guenons, distinguished by their yellowish or rufous ear-tufts, and the three black lines over the forehead.



ERXLEBEN'S GUENON.

XXXIII. ERXLEBEN'S GUENON. CERCOPITHECUS GRAYI.

Cercopithecus grayi, Fraser, Cat. Knowsl. Coll., p. 8 (1850); Gray, P. Z. S., 1868, p. 182; id., Cat. Monkeys Brit. Mus., p. 22 (1870); Sclater, P. Z. S., 1893, p. 256.

Cercopithecus erxlebenii, Dahlb. et Puch., Rev. et Mag. de Zool., 1856, p. 96; 1857, p. 196; Dahlb., Zool. Stud., p. 109, pl. 5 (1856); Gray, P. Z. S., 1868, p. 182; id., Cat. Monkeys Brit. Mus., p. 23 (1870; in part); Sclater, P. Z. S., 1871, p. 36; 1893, p. 254; 1894, p. 484.

Cercopithecus pogonias, Schlegel, Mus. Pays-Bas, vii., p. 82 (part).

(Plate XXX.)

Characters.—Face and ears naked, flesh-coloured; whiskers commencing under the eyes, bushy, yellow; the ears with a rufous or yellow tuft internally; head yellow, but interrupted by three broad black streaks, extending from above each eye and from the nose to the back of the head; back, anterior aspect of the thighs, and the sides yellowish rufous, darker towards the lower back—the hairs ringed with black and yellow, upper surface and entire terminal third of the tail black. Under surface of the body, inner side of the limbs, anterior aspect of the thighs and legs, and the under side of the basal two-thirds of the tail, yellow or rufous yellow; region of the anus white; external aspect of the fore-limbs black; the hands and feet black.

A female specimen of this species which lived for some years in the menagerie of Lord Derby at Knowsley, and died in 1836, is now in the Derby Museum, Liverpool. It is the type of *C. grayi*, with which *C. erxlebeni* is identical.

Distribution.—West Africa: River Congo.

XXXIV. THE BEARDED GUENON. *CERCOPITHECUS POGONIAS*.

Cercopithecus pogonias, Bennett, P. Z. S., 1833, p. 67; Wagner in Schreber Säugeth. Suppl., v., p. 43 (1855); Lesson, Spec. Mamm., p. 74 (1840); Martin, Mammif. An., p. 543 (1841); Gray, P. Z. S., 1868, p. 182; id., Cat. Monkeys Brit. Mus., p. 23 (1870); Sclater, P. Z. S., 1893, p. 254; Schlegel, Mus. Pays-Bas, vii., p. 82 (1876).

Characters.—Similar to *C. grayi*, but differs in the yellow forehead being interrupted in the middle by only a few black hairs, and not by a streak; the whiskers paler; the back part of the head, the fore part of the back, and the sides grizzled, the hairs being black, ringed with white; while down the middle of the back to the base of the tail runs a broad black stripe.

Distribution.—Fernando Po.

XXXV. THE BLACK-FOOTED GUENON. *CERCOPITHECUS NIGRIPES*.

Cercopithecus nigripes, Du Chaillu, Pr. Bost. N. H. Soc., vii., p. 360 (1860); Gray, P. Z. S., 1868, p. 182; Scl., P. Z. S., 1893, p. 254.

Cercopithecus erxlebenii, var. *nigripes*, Gray, Cat. Monkeys Brit. Mus., p. 23 (1870).

Cercopithecus pogonias, Schlegel, Mus. Pays-Bas, vii., p. 182 (1876).

Characters.—Very similar to *C. pogonias*, but differs in being darker, and in having the dorsal stripe wider and more diffused lower down. It is probably only a variety of the preceding.

Distribution.—Gaboon, where it was discovered by Du Chaillu.

XXXVI. WOLF'S GUENON. *CERCOPITHECUS WOLFI*.

Cercopithecus wolffi, Meyer, Notes, Leyden Mus., xiii., p. 63 (1891); id., P. Z. S., 1894, p. 83, pl. vii.; Sclater, P. Z. S., 1893, p. 258.

Characters.—Face, except the lips, which are flesh-colour, and the temples, greyish-black; a yellowish-white bar across the forehead from ear to ear; whiskers greyish-yellow; ear-tufts reddish-brown; upper surface dark slate-grey; sides blue-grey, the hairs barred with several pale rings, and tipped with black; dorsal stripe, narrowing towards the tail, olive-yellowish, brighter on the crown, and brownish-yellow towards the tail; basal half of the tail above, ashy-grey, below white; an orange-yellow patch on the sides; chin, sides of neck, under surface of body and inner side of limbs white; belly washed slightly with orange; shoulders and outer aspect of the fore-limb, black—the hairs ringed with grey; on the hinder edge of the fore-arms an ochre-coloured stripe; outer side of thighs and legs bright red-brown, becoming orange on their anterior and posterior internal margin. Length of body, $18\frac{1}{4}$ inches; of tail, 24 inches.

Distribution.—West Africa: the exact locality is unknown.

VI. *CERCOPITHECI BARBATI*.

The members of this group are distinguished by possessing a beard and a frontal crest.

XXXVII. THE DIANA GUENON. *CERCOPITHECUS DIANA*.

Simia diana, Linn., Syst. Nat., i., p. 38 (1766).

Cercopithecus diana, Erxleb., Syst. Regne An., p. 30 (1777); Desmar., Mamm., p. 60 (1820); Martin, Mammif. An., p. 523 (1841); Geoffr., Dict. Hist. Nat., iii., p. 304 (1849); Wagner in Schreb. Säugeth. Suppl., v., p. 48 (1855); Gray, Cat. Monkeys Brit. Mus., p. 22 (1870; pt.); Schl., Mus. Pays-Bas, vii., p. 92 (1876; pt.); Jentink, Notes, Leyd. Mus., x., p. 12; Sclater, P. Z. S., 1893, p. 254.

Cercopithecus diana, var. *ignita*, Gray, Cat. Monkeys Brit. Mus., p. 22 (1870).

Characters.—Face black. Sides of face with long bushy whiskers, terminating on the chin in a pointed white beard a few inches long; across the forehead run two arched lines of erect hairs, the lower black, the upper white; top of the head, back of the neck, shoulders, the sides, middle of belly, ashy-grey—the hairs being white and black ringed, and white-tipped; outside of limbs darker, the hands black; tail grey, the tip black; neck, chest, and anterior part of the arms white; from the middle of the back a deep chestnut spot extends, and widens to the root of the tail; from the base of the tail, the outer aspect of the thighs, white; posterior part of under side of body and inner side of thighs, orange-yellow, or orange red, or bright red-bay (*C. ignita* of Gray). Length of body, 18 inches; of tail, 24 inches.

Distribution.—West Africa: from Liberia to the Congo.

Habits.—This beautiful and graceful Monkey is not uncommon in captivity, and nearly all we know of its habits has been obtained from such specimens. “Like the rest of its tribe,” writes Mr. Martin, “it is gentle, lively, active, and familiar while young, but as age advances it becomes reserved and treacherous. . . . Its frontal cres of white hairs, and



DE BRAZZA'S GUENON.

its white peaked beard 'of formal cut,' give a singular aspect to its physiognomy. This latter ornament it has been observed, so Mr. Ogilby states, to be solicitous in keeping neat and clean; when about to drink it takes the beard in its hand with amazing gravity, and holds it back in order to prevent it from dipping into the fluid."

XXXVIII. THE PALATINE GUENON. *CERCOPITHECUS*
PALATINUS.

Le Roloway ou la Palatine, Buff., Hist. Nat. Suppl., xv., p. 77 (1789).

Cercopithecus roloway, Erxleb., Syst. Rég. An., p. 42 (1777); Geoffr., Dict. Hist. Nat., iii., p. 304 (1849); Fisch., Synop. Mamm., p. 20 (1829).

Cercopithecus palatinus, Wagner, in Schreb. Säugeth. Suppl., v., p. 47 (1855); Schl., P. Z. S., 1893, p. 257.

Cercopithecus diana, Gray, Cat. Monkeys Brit. Mus., p. 22 (1870; pt.); Schl., Mus. Pays-Bas, vii., p. 92 (1876; pt.).

Characters.—Very similar to *C. diana*, but differs in having the back very dark brown, nearly black, instead of chestnut; the head, flanks, thighs, limbs dark grey; where the belly in *C. diana* is black, in *C. palatinus* it is white.

Distribution.—Gold Coast.

XXXIX. DE BRAZZA'S GUENON. *CERCOPITHECUS BRAZZÆ*.
(Plate XXXI.)

Cercopithecus brazzæ, Milne-Edwards, Rev. Sc. (3), xii., p. 15 (1886); Sclater, P. Z. S., 1893 pp. 255 443, pl. xxxiii.

Characters.—Top of head, back, sides of face, outside of thighs, and root of tail pale fulvous, densely ringed with black; a frontal band, of dense erect hairs, chestnut, white-

tipped, bordered behind by a broad black band from ear to ear; ears nearly naked; upper part of nose and a narrow line above the eyes, in front of the chestnut band, black; lower nose and upper lip white; a longish white beard on the chin and throat; belly dark fulvous, the hairs densely ringed with black; hands and feet black; inner side of thighs, arms, and a streak along the posterior aspect of the thighs, white; tail, except at its base, black. Length, 21 inches; tail, 22 inches. (*Sclater.*) Nearly related to *C. neglectus*.

Distribution.—West Africa: Upper Congo.

VII. CERCOPITHECI TRITUBERCULATI.

This section of the Family contains but one species, distinguished by the posterior lower molars having only three, instead of four, tubercles to their crowns. On this account it has been considered by some systematists to be the type of a distinct genus, *Miopithecus*.

XL. THE TALAPOIN. CERCOPITHECUS TALAPOIN.

(Plate XXXII.)

Talapoin, Buff., Hist. Nat., xiv., p. 287, pl. xl. (1766).

Cercopithecus talapoin, Erxleb., Syst. Rég. Anim., p. 36, no. 15 (1777), Geoffr., Ann. Mus., xix., p. 93 (1812); Desm., Mamm., p. 56; Martin, Mammif. Anim., p. 534 (1841); Schl., Mus. Pays-Bas, vii., p. 71 (1876).

Simia talapoin, Gm., Syst. Nat., i., p. 101 (1788); Schreber, Säugeth., i., p. 101, no. 18, pl. 17; Fischer, Synops. Mamm., p. 21 (1829).

Cercopithecus pileatus, Desm., Mamm., p. 57 (1820; nec Shaw).

Miopithecus talapoin, Geoffr., Dict. Nat. Hist., iii., p. 308 (1849); Gray, Cat. Monkeys Brit. Mus., p. 20 (1870).



THE TALAPOIN.

Miopithecus capillatus, Geoffr., C. R., xv., p. 720 (1842.)

Simia melarhinus, Schinz, Synop. Mamm., i., p. 47 (1844).

Characters.—Small in size ; head globular ; muzzle very short ; eyes large ; ears very expanded ; nose but slightly protruding, with oblong nostrils opening laterally, the septum thick ; hands short, fingers united by a web.

Skull large ; superciliary ridges and orbits also large ; posterior molar in both jaws small ; those in the lower jaw only three-cusped (two cusps in front, one behind) ; anterior and median lower molars four-cusped.

Naked skin round the eyes orange ; upper lip yellow ; whiskers directed downward, bright straw-yellow ; upper eyelids white ; nose black ; ears naked, black ; frontal hairs erect, forming a distinct curved crest. Fur speckled olive-green—the hairs grey at the roots, olive-green in the middle and black-tipped ; fur darker on the body, paler and more washed with yellow on the outer side of the body and upper side of the hands and feet. Under surface of the body and the inside of the limbs white ; tail ashy-grey. Length of body, $13\frac{1}{2}$ inches.

Distribution.—West Africa : Gaboon.

Habits.—Nothing is known of the habits of this rare species, which is the smallest of the Guenons.

THE GUEREZAS AND LANGURS.—SUB-FAMILY SEMNOPITHECINÆ.

The members of this Sub-family are characterised, externally, by having elongated slender bodies, with their hind pair of limbs longer than their front pair, and a very long tail. In-

ternally their digestive organs differ from those of the *Cerco-pethecinæ*, the stomach being three times as large as that organ in any Guenon of the same size. Instead of being a simple rounded sac, it is elongate and composed of several pouches. These compartments are quite different, however, from those seen in a Ruminant's stomach, such as that of the Ox. In the latter, each of the various divisions is differently constructed, and its mucous membrane is peculiarly modified; in the Guenon it is divided into two portions, the left of which forms a very considerable cavity, while the right is long and narrow. Two great, strong, muscular bands run along its entire length, one along the greater, the other along the lesser, curvature, like the muscles of the great intestine, forming a series of large cells. (*Otto*.) In addition to this, the whole organ is twisted upon itself, so that the entrance and exit regions come to be close together. Its mucous membrane is throughout of the same character and form. The cæcum has no *appendix vermiciformis*, or worm-shaped tube, which is the representative (as in Man) of the elongate cæcum found among the Lemuroids, as among most of the Mammals. The muzzle in this Sub-family is very short, and the nose is generally, but slightly, prominent. There are ischial callosities, but no cheek-pouches among the Langurs, though small ones have been described in certain of the Guerezas (*Colobus*). When laryngeal sacs are present they are formed of a single sac with a median aperture into the windpipe, in the space below its superior opening; it may have large prolongations down the front of the neck, as far indeed as the arm-pits.

The frontal region of the skull is rounded, and the facial angle is comparatively large. The ascending portion of the hinder part of each half of the lower jaw is high, and its hind-

most molar on each side has five cusps to its crown. Their breast-bone is very narrow. The vertebræ forming the tail are much elongated. All have the central (*os centrale*) bone in the *carpus* (or wrist).

The posterior lobes of the cerebrum project beyond the cerebellum and conceal it; they are very short among the Langurs. The principal grooves and foldings seen in the human brain are represented, and there is a perfectly distinct *hippocampus minor*—an eminence in the cavity of the posterior lobe, which was for a long time supposed to be a character peculiar to the human brain, and the presence or absence of which was once a celebrated cause of difference between certain distinguished anatomists.

The food of the *Semnopithecinae*—of which they consume a large bulk at a time—consists chiefly of leaves and young shoots of trees. For this purpose their sacculated stomach forms a necessary receptacle and store for their food during their hasty collection of it.

The Sub-family practically consists of but two genera—*Colobus* and *Semnopithecus*. One species, forming a third genus (*Nasalis*), is closely related to the latter. The *Colobi* are confined to Africa, and the *Semnopithecini*—of which there are a large number of species—inhabit the mainland of India, the Malayan Peninsula, and the neighbouring Archipelago as far east only as *Wallace's line*, which runs between the islands of Bali and Lombeck, and northwards to the east of Borneo.

THE GUEREZAS. GENUS COLOBUS.

Colobus, Illiger, Prodr. Syst. Mamm., p. 69 (1811).

The Guerezas are a group of Monkeys entirely confined to the African continent. The character which especially dis-

tinguishes them from the Langurs, which (with the exception of the monotypic Nosed Monkeys of Borneo) form the remaining members of the Sub-family, is the condition of their thumbs. In these animals the thumb is practically absent, being either quite invisible externally, or presenting merely a tubercle, which may or may not have a nail upon it. The hands are long and straight, and the nails of the fingers are compressed and pointed. In these animals the body is slender, though somewhat more robust than in *Semnopithecus*. The face is naked or covered only with a sparse and soft down, the nostrils being separated by a wide division. From this feature these Monkeys have been described by some naturalists as Platyrrhine or Megarrhine. The ears are rounded above, with the posterior upper angle pointed or square, and generally naked, but they are sometimes haired or tufted inside. All the Guerezas have a specially elongated tail, which is often tufted at the end. Their fur is long and slightly harsher than that of the Langurs, but it is not ringed with differently coloured bands. Their callosities are large and naked.

The skulls in *Colobus* and *Semnopithecus* are very similar in shape; but those of the former are often longer, larger, and have a greater cranial capacity than those of the *Semnopithecus*. The muzzle is short, and the hind molar of the lower jaw has five tubercles. The thumbs, even when apparently absent, are represented under the skin by a single bone, the ungual phalanx, which articulates directly with the metacarpal bone. The Guerezas differ from the Guenons in having very small cheek-pouches and no laryngeal sacs. Their stomach is transversely sacculated like the upper part of the great intestine in the human body.

The Guerezas, which represent the Langurs in Asia, inhabit

Tropical Africa, ranging from Abyssinia and Zanzibar in the east, to Senegambia, Angola, and perhaps the island of Fernando Po on the west—between about 15° N. lat. on the eastern and 12° on the western side, to 10° S. lat. They live in small troops in the forest, both on the plains and on the mountains, their food consisting of fruits, but principally of leaves, which they eat in large quantities, as the peculiar and capacious form of their storehouse-like stomach, in lieu of cheek-pouches, would indicate.

Of their habits in their native state very little indeed is known, for they prefer to keep to the great trees of the forests far from human habitation ; while, owing to their very delicate constitution enabling them to resist for a very short period the rigours of a climate cooler than their own, scarcely anything has been learnt of them in captivity. The beautiful skins of many of the species form a considerable article of commerce in Europe and America to adorn the costumes of the most refined and cultivated ladies, who vie for their possession with the semi-nude and barbarous warriors of Equatorial Africa, by whom they are also used as ornaments for their persons and for decorations for their weapons.

I. VAN BENEDEN'S GUEREZA. *COLOBUS VERUS*.

Colobus verus, Van Bened., Bull. Acad. Sc., Brux., v., p. 344, pl. 13 (1838) ; Less., Spec. Mamm., p. 70 (1840) ; Martin, Mammif. Anim., p. 503 (1841) ; Geoffr., Cat. Méth. Primates, p. 17, no. 4 (1851) ; Wagner, in Schreber, Säugeth. Suppl., v., p. 37 (1855) ; Gray, P. Z. S., 1868, p. 182 ; Schl. Mus. Pays-Bas, vii., p. 28 (1876).

Semnopithecus (Colobus) olivaceus, Wagner, in Schreber's Säugeth. Suppl., i., p. 309 (1840).

Colobus cristatus, Gray, Ann. and Mag. N. H. (3), xvii., p. 77 (1866); id., P. Z. S., 1886, p. 182, pl. xv.; id., Cat. Monkeys Brit. Mus., p. 19, et Suppl., p. 128 (1870).

Procolobus verus, Rochebr., Faun. Sénég., Mamm. Suppl., p. 97, pl. 1 (1887).

Characters.—Body stout; limbs robust; head oval, the muzzle slightly prominent; face and ears naked, brownish-black; thumb entirely absent; callosities large. Hair on the top of the head, forming a median crest, reddish-olive; whiskers, directed backward, pale yellow; over the eyes a frontal bar of the same colour, coalescing with the whiskers opposite the eyes; upper part of body to base of tail and down to the knees, covered with short dark olive-brown hair, finely ringed with black, and washed with rufous on the back of the neck and on the outside of the thighs; the tail long and thin, olive-brown or brownish-grey; shoulders, flanks, and outer surface of the limbs, pale greyish-green; upper sides of the hands and feet reddish-brown; throat, chest (the hair of which is elongated), under surface of the body and inner side of the limbs, ashy-grey. Length of body, 21 inches; of tail, $24\frac{1}{4}$.

Distribution.—West Africa. Forests of Fanti and Ashanti.

II. THE RED-CRESTED GUEREZA. COLOBUS RUFOMITRATUS.

*Colobus rufomitratu*s, Peters, M. B. Akad. Berl., 1879, p. 829, pl. ia. and ii.

*Tropicolobus rufomitratu*s, Rochebr., Faun. Sénég., Mamm., Suppl., p. 102 (1887).

Characters.—Body thick-set and covered with short hair; face

and ears naked and brownish-black, the long superciliary hairs and the transverse crest, from ear to ear, black ; front and back of the head to the nape of the neck brownish-red ; cheeks and chin dark grey ; back, from the nape of the neck, flanks, outer and hinder surfaces of the limbs, and the feet, dark brownish-olive ; front of the shoulder, of the arm and part of the fore-arm, and the front of the thighs, pale reddish-yellow ; breast, under side of the body and inner side of the limbs, of the same colour, but paler ; tail coloured like the back, the tip tufted, brownish-black. Length of body, $26\frac{3}{4}$ inches ; tail, $27\frac{3}{4}$.

Distribution.—This very rare species lives in East Africa. Forests at Muniuni, near Mombasa.

III. KIRK'S GUEREZA. COLOBUS KIRKI.

Colobus kirkii, Gray, P. Z. S., 1868, p. 180, pl. xv. ; id., Cat. Monkeys Brit. Mus., p. 127 (1870) ; Schl., Mus. Pays-Bas, vii., p. 25 (1876) ; Kirk, Ann. and Mag. N. H. (5), xiii., p. 307 (1884).

Guereza kirkii, Trouess., Consp. Mamm., p. 14 (1879).

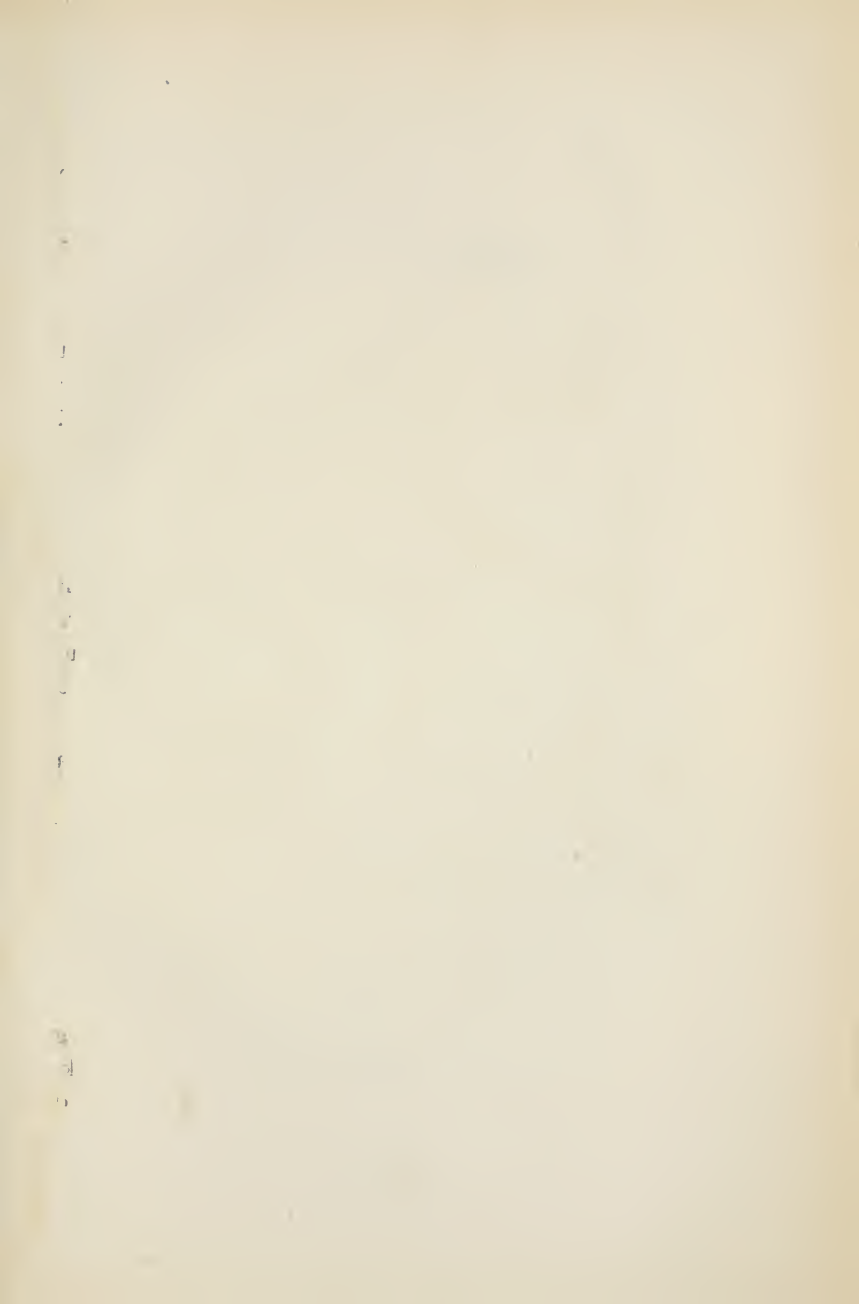
Piliocolobus kirki, Rochebr., Faun. Sénégal, Mamm. Suppl., p. 112, pl. vi. (1887).

Characters.—Face and ears naked, bluish-black ; tip of the nose greyish white ; head, with long divergent hairs, forming a kind of cap, bent backwards over the forehead ; crown of head, back, and tail, reddish-brown, paler towards the extremity ; the nape, shoulders, arms, outer and anterior aspects of the fore-arms, the centre of the outer aspect of the thighs and legs, and the hands and feet, black ; forehead, cheeks, chest, front aspect of the shoulders, the whole of the under side of the body,

and the inner side of the limbs, white ; anterior aspect of the lower part of the arm, the hind-margin of the fore-arms, and the anterior and posterior aspects of the thighs and legs, greyish white. (*Gray.*) Length of body, $25\frac{1}{2}$ inches ; of tail, 31 inches.

Distribution.—Island of Zanzibar. This Monkey was first sent to Europe by Sir John Kirk in 1868. Its discoverer, writing in 1884, says that even in 1868 the Monkey was rare, but was still to be found in many of the wooded districts of that island. He writes : “I am not aware that it has been found in Pemba Island or on the mainland ; and now I discover that, if not extinct, it has become so rare as not to be procurable, even when I sent the hunters over the island. I have a report that it exists still in one spot, which they could not reach. I believe that two specimens were sent to Germany some time ago ; but it looks as if the animal will be lost to science. This is due to the destruction of forest and jungle over the island.”

“*Colobus kirkii*,” writes Mr. H. H. Johnston, in 1886, “had disappeared from nearly every part of the island of Zanzibar, but a rumour prevailed that it still lingered on a clump of forest as yet unvisited by hunters. Thither Sir John sent his *chasseurs* to report on the Monkey’s existence. After a week’s absence they returned, triumph illumining their swarthy lineaments. ‘Well, did you find them?’ asked the British Consul General. ‘Yes,’ replied the men with glee, ‘and we killed them every one!’ wherewith twelve Monkey-corpses were flung upon the floor, and *Colobus kirki* joined the Dodo, the Auk, the Rhytina and the Moa, in the limbo of species extinguished by the act of man.”





BAY GUEREZA.

IV. THE BAY GUEREZA. COLOBUS FERRUGINEUS.

(Plate XXXIII.)

Simia ferruginea, Shaw, Gen. Zool., i., p. 59 (1800); Desm., Mamm., p. 53 (1820); Fischer, Synops. Mamm., p. 13 (1829).

Colobus ferrugineus, Illiger, Prodr. Syst. Mamm., p. 69 (1811); Gervais, H. N. Mamm., i., p. 66 (1854); Gray, P. Z. S., 1868, p. 181; Schl., Mus. Pays-Bas, vii., p. 27 (1876); Rochebr., Faun. Sénag., Mamm., p. 25 (1883-5); Sclater, P. Z. S., 1890, p. 590, pl. xlviii.

Colobus ferruginosus, Geoffr., Ann. Mus., xix., p. 92 (1812); Martin, Mammif. Anim., p. 498 (1841).

Colobus temminckii, Kuhl, Beitr., Zool., p. 7 (1820); Desm., Mamm., p. 53 (1820); Ogilby, P. Z. S., 1835, p. 99; Martin, *op. cit.*, p. 499 (1841).

Colobus pennantii, Waterh., P. Z. S., 1838, p. 57; Martin, *op. cit.*, p. 501; Geoffr., Dict. H. N., iv., p. 209 (1849); Gray, P. Z. S., 1868, p. 181, var. 2.

Colobus ferruginea, Less., Spec. Mamm., p. 68 (1840); Gray, Cat. Monkeys Brit. Mus., p. 18 (1870).

Colobus fuliginosus, Ogilby, Cat. Mamm. Z. S., p. 97 (1839); Is. Geoffr., Cat. Méth. Prim., p. 17 (1851); Temm., Esquiss. Zool., p. 24 (1853); Dahlb., Conspect. Mamm. p. 95 (1857).

Colobus rufo-fuliginosus, Ogilby, Cat. Mamm. Z. S., p. 270 (1839).

Colobus rufo-niger, Ogilby, Cat. Mamm. Z. S., p. 273 (1839); Martin, *op. cit.*, p. 500 (1841); Gray, P. Z. S., 1868, p. 181, var. 1.

Piliocolobus ferrugineus, Rochebr., Faun. Sénag., Mamm. Suppl., p. 105, pl. iii. (1887).

Piliocolobus bouvieri, Rochebr., *tom. cit.*, p. 108, pl. iv.

Piliocolobus tholloni, Rochebr., *tom. cit.*, p. 110, pl. v.

Characters.—Body robust, covered with rather long hairs; face naked, blackish-blue, except the tip of the nose, corners of the mouth, and edge of lower lips, which are flesh-colour; ears naked, blackish-blue; nose short and somewhat prominent; frontal hairs erect, directed forward, black; top and back of the head as far as the nape, black; back, sides, outer aspect of the thighs, base and upper surface of the tail, bluish or olive-black, with whitish hairs mingled on the shoulders and thighs; sides of the face from the middle of the cheek backwards to a point behind (enclosing the ears), neck, chin, and throat, the under surface of body, as well as the whole of the limbs (except the outer aspect of the thighs), and the under surface of the tail, rich rufous; tips of the fingers and toes black. Length of body, 29 inches; of tail, 31 inches. The hairs are all uniformly coloured. The thumb is often fairly well developed, and may have a nail.

This species is extremely variable in the coloration of its fur; the back in some varieties is rufous, the cheeks and throat may be sandy-yellow or white, and the under side whitish or white, and the outside of the fore-limbs may be black, or agreeing in colour with the outside of the thighs. The well-developed *fœtus* shows no signs of the varied coloration of later life, but is quite white.

Distribution.—West Africa. Not uncommon along the whole West Coast.

Habits.—Like many of the other species of the genus, this species keeps to the tops of the highest trees of the forest. Its food consists of fruits and leaves.

V. THE BLACK GUEREZA. COLOBUS SATANAS.

Colobus satanas, Waterhouse, P. Z. S., 1838, p. 58; Martin, Mammif. Anim., p. 497 (1841); Gervais, H. N. Mamm., p. 65 (1854); Sclater, P. Z. S., 1860, p. 246; Reichenb., Naturg. Affen, p. 88 (1862); Is. Geoffr., Dict. H. N., iv., p. 208 (1849); Gray, P. Z. S., 1868, p. 181; id., Cat. Monkeys Brit. Mus., p. 17 (1870); Schleg, Mus. Pays-Bas, vii., p. 27 (1876); Matschie, S.B. Ges. Natur. Fr. Berlin (1892), p. 226.

Semnopithecus anthracinus, Leconte, Proc. Acad. Nat. Sci. Philad. 1857, p. 10.

Guereza satanas, Truess. Consp. Mamm., p. 10 (1879).

Stachycolobus satanas, Rochebr. Faun. Sénag. Suppl. Mamm., p. 114, pl. vii. (1887).

Characters.—Fur very long, coarse; face naked, black; ears rounded, black; superciliary and frontal hairs very long; hairs of the cheeks long, very coarse, and directed backwards; fur entirely and uniformly black on the body and tail; hairs on tail short; tip not tufted. Length of body, 40 inches; of tail, 59½ inches.

Distribution.—West Africa. Forests of Senegambia, Sierra Leone, Gaboon, and the Congo. This is one of the commonest species in West Africa.

VI. THE URSINE GUEREZA. COLOBUS URSINUS.

? *Full-bottom Monkey*, Pennant, Quad., i., p. 197, pl. 24 (1781).

? *Colobus polycomus*, Illig., Prodr., p. 69 (1811).

Colobus ursinus, Ogilby, P. Z. S., 1835, p. 98; Less. Spec. Mamm., p. 70 (1840); Martin, Mammif. Anim., p. 495 (1841); Fraser, Zool. Typ., pl. i. (1849); Is. Geoffr., Dict. H. N., iv., p. 208 (1849); Sclater, P. Z. S., 1860, p. 245; Reichenb. Naturg. Affen, p. 86 (1862); Schl., Mus. Pays-Bas, vii., p. 24 (1876).

Colobus personatus, Temm., Mus. Lugd., *vide* Reichenb. *t.c.*, p. 88 (1862).

Colobus polycomus, var., Gray, Cat. Monkeys Brit. Mus., p. 18 (1870); Rochebr., Faun. Sénégal, Suppl. Mamm., p. 117, pl. viii. (1887), Matschie S.B. Ges. Natur. Fr. Berlin, 1892, p. 227.

Guereza ursinus, Trouess., Consp. Mamm., p. 10 (1879).

Characters.—Body large; fur long and glossy; face and ears naked and black; fur on neck, shoulders, and along the back forming a mantle; fur over the whole of the body and limbs deep black; front and back of head, auricular region, sides of the neck and throat, greyish-white, mingled with greyish-black; the tail long, short-haired, white at the extremity.

Young.—White, with a few scattered black hairs; tail well tufted.

Distribution.—West Africa: Sierra Leone.

N.B.—Sinoe is the most easterly region whence skins come to the coast.

Habits.—This species is often found alone, not in large troops. It is more rare in collections than *C. ferrugineus*.

VII. THE WHITE-THIGHED GUEREZA. *COLOBUS VELLEROSUS*.

Semnopithecus vellerosus, Is. Geoffr. in Bélang. Voy. Mamm., p. 37 (1830).

Semnopithecus bicolor, Wesmael, Bull. Acad. Sc. Brux., ii., p. 236 (1835).

Colobus leucomeros, Ogilby, P. Z. S., 1837, p. 69; Martin, Mammif. Anim., p. 497 (1841).

Colobus ursinus, Temm., Esquiss. Zool. Guin., p. 21 (1853).

Colobus vellerosus, Is. Geoffr., Dict. H. N., iv., p. 116 (1849); id., Cat. Méth. Primates, p. 17 (1851); Gervais, H. N. Mamm., i., p. 65 (1854); Sclater, P. Z. S., 1860, p. 246; Reichenb., Naturg. Affen, p. 87 (1862); Matschie, S.B. Ges. Natur. Fr. Berlin, 1892, p. 226.

Colobus bicolor, Gray, P. Z. S., 1868, p. 181; id., Cat. Monkeys Brit. Mus., p. 18 (1870); Schlegel, Mus. Pays-Bas, vii., p. 26 (1876); Rochebr., Faun. Sénégal, Mamm., p. 24 (1885).

Guereza vellerosus, Truess. Consp. Mamm., p. 10. (1879).

Pterycolobus vellerosus, Rochebr., *op. cit.*, Suppl. Mamm., p. 125, pl. x. (1887).

Characters.—Hair on the back, flanks, and loins, very long and silky; the fur everywhere deep black, excepting a frontal band, which coalesces with the long hair of the auricular region and sides of the neck, which are white, as well as the chin, the throat, a spot on each side of the buttocks, the external and posterior aspects of the thighs, and the short-haired tail, which is tufted at the tip; the thumbs very short, but distinct, and having a flat nail. Length of body, 28½ inches; of tail, 31 inches.

The young are similar in coloration to the adults, but the nair is not elongated

Distribution.—West Africa : from the Gold Coast to Senegambia, where it is not uncommon.

VIII. THE ANGOLAN GUEREZA. COLOBUS ANGOLENSIS.

Colobus angolensis, Sclater, P. Z. S., 1860, p. 245 ; Reichenb., Naturg. Affen, p. 88 (1862) ; Gray, P. Z. S., 1868, p. 181 ; id., Cat. Monkeys Brit. Mus., p. 18 (1870) ; Schl., Mus. Pays-Bas, p. 24 (1876) ; Rochebr., Faun. Sénégal., Suppl. Mamm., p. 119 ; Bocage, Journ. Sc. Lisb., 1889, p. 10 ; Matschie, S.B. Ges. Nat. Fr. Berlin, 1892, p. 226.

Colobus palliatus, Peters, M. B. Akad. Berl., 1868, p. 637 ; id., *op. cit.*, 1879, p. 830, pl. iv.A. ; Gray, Ann. Mag. N. H. (4) iii., p. 171 (1869) ; Sclater, P. Z. S., 1880, p. 68 ; Matschie, S.B. Ges. Natur. Fr. Berlin, 1892, p. 227.

Guereza angolensis et *G. palliatus*, Trouess. Consp. Mamm., pp. 10 and 20 (1879).

Characters.—Face and ears naked, black ; hair radiating round the face, long, and directed backward, especially on the temples and sides of the face, and on the shoulders, where it forms a lengthy mantle ; hairs on the top of the head shorter than on the back. General colour deep glossy black, except the frontal band over the eyes, the temporal hairs, whiskers and mantle, which are white. Tail long and black, except for the terminal third, which is white, and has a thick tufted tip ; a white spot on the perinæum. Length of body, 23½ inches ; of tail, 34 inches.

Distribution.—East Africa : the valley of the Pangani. Said to extend to Angola on the south-west coast.

IX. RUPPELL'S GUEREZA. COLOBUS GUEREZA.

Colobus guereza, Rüpp, Neue Wirbelth. Säugeth., p. 1, pl. 1 (1835); Lesson, Spec. Mamm., p. 68 (1840); Martin, Mammif. An., p. 494 (1841); Is. Geoffr., Dict. H. N., iv., p. 117 (1849); id., Cat. Méth. Primates, p. 17 (1851); Temm., Esquiss. Zool. Guin., p. 23 (1853); Dahlb., Zool. Stud., i., p. 95 (1857); Sclater, P. Z. S., 1860, p. 246; Gray, P. Z. S., 1868, p. 182; Schl., Mus. Pays-Bas, vii., p. 25 (1876); Thomas, P. Z. S., 1885, p. 219; Matschie, S. B. Gesell. Natur. Fr. Berlin, 1892, p. 225, et seqq.

Guereza rueppelli, Gray, Cat. Monkeys Brit. Mus., p. 19 (1870); Rochebr., Faun. Sénégalamb., i., Mamm., p. 25 (1885); id., *t.c.*, suppl., p. 129, pl. xi. (1887).

Guereza guereza, Trouess., Consp. Mamm., p. 10 (1879.)

Guereza occidentalis, Rochebr., *op. cit.*, Suppl., p. 140, pl. xiii. (1887).

Characters.—Face thinly covered with greyish-white hairs; nose and upper lip black; ears, naked, black; a bar across the forehead, expanding on the sides of the head, throat, sides of the neck, and chin, white; from the shoulders a mantle of long white silky hairs extending down each side and meeting on the lower back, so as to hang down over the sides of the body, the hips, and thighs; the outside of the latter greyish-white; the hinder third of the tail tufted and white, each hair ringed with numerous fine bands of brown; the whole of the rest of the body deep shining black. Length of the body, 28 inches; of the tail, 28½.

Distribution.—This remarkably beautiful Monkey inhabits North-Eastern Africa, where it is not uncommon in the pro-

vinees of Godjan and the kingdom of Shoa. Dr. B'anford, however, did not hear of it during his journey with the British army to Magdala. It is found also in the neighbourhood of Mount Kilimanjaro, and was shot in the forested plains near the coast by Mr. H. H. Johnston. The form of this species which has been described under the name of *C. occidentalis* is more or less confined to the south of Lulongo, in the Upper Congo, between 6° N. latitude and 12° East longitude.

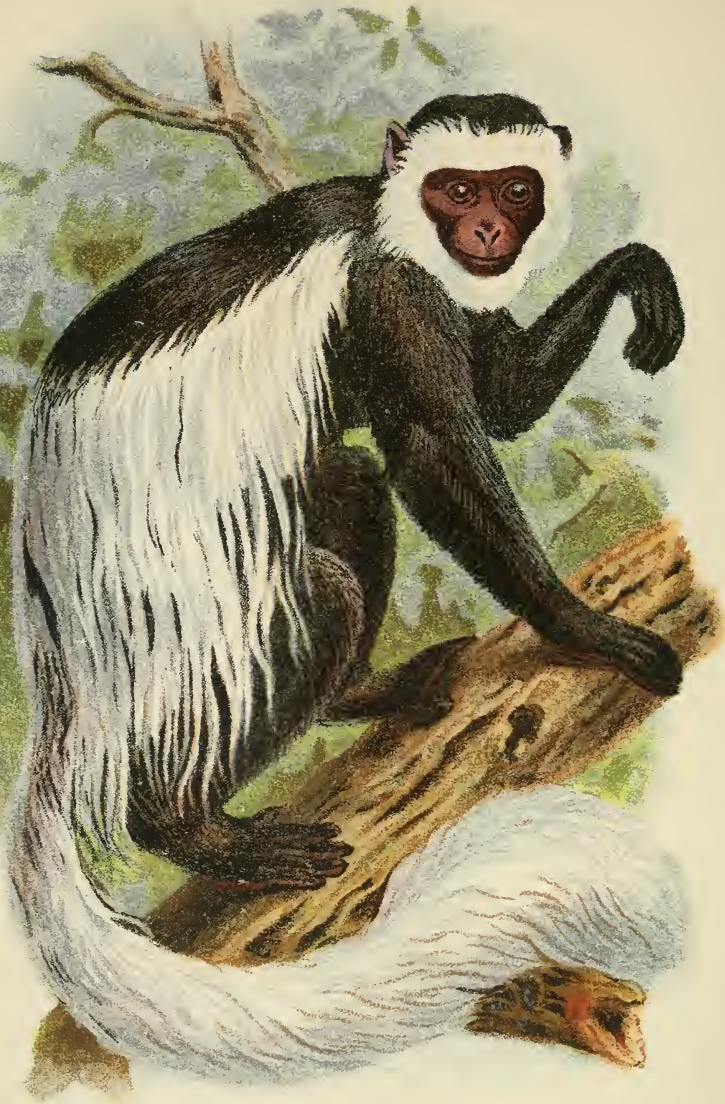
Habits.—The “Guereza,” as the natives of Abyssinia name this species, lives in small troops in the very highest trees of the forest, in the neighbourhood of streams. It is very active and lively, and quite harmless in disposition. The food of this *Colobus* consists of wild fruits, insects, and such like, which it searches for throughout the day only, retiring during the night. “The *Colobus* Monkey,” observes Mr. H. H. Johnston, “is almost the only one that quite avoids the neighbourhood of Man; the other genera frequent the vicinity of native plantations, and doubtless profit by the abundance of cultivated food.” The skin of this Monkey is in great request among the Masai warriors both for dresses, capes, and caps, the long white mantle of the creature forming a most ornamental costume; and also to cover their shields with.

X. THE WHITE-TAILED GUEREZA. *COLOBUS CAUDATUS*.

Colobus guereza caudatus, Thomas, P. Z. S., 1885, p. 219, pl. xii.; Johnston, Kilimanj. Exped., pp. 174, 388, 389, fig. 72; Matschie, S. B. Gesell. Naturf. Fr. Berlin, 1892, p. 225.

Guereza caudatus, Rochebr., Faun. Sénég. Suppl., Mamm., p. 136, pl. xii.

(Plate XXXIV.)



THE WHITE-TAILED GUEREZA.

Characters.—Very similar to *C. guereza*, but “characterised by having the white brush of the tail very much larger and finer than is the case in the true Abyssinian *C. guereza*. In the latter animal the proximal 12–16 inches of the tail is short-haired and quite black, only the terminal 8–12 inches being white and tufted, so that the white mantle hangs down from the body and hides only about one-third of the black part of the tail.” (*Oldfield Thomas*.) In *Colobus caudatus*, Mr. Thomas adds, only some three or four inches of the base of the tail are black, and the remainder (with the hairs about 20 or 21 inches) is developed into a magnificent white brush, of which individual hairs are from seven to nine inches in length. The hairs of the white body-mantle—washed like the tail with yellowish cream-colour—entirely cover the black at the base of the tail, the white of the latter and of the mantle being quite continuous.

Distribution.—East Africa; very common all round the base of Mount Kilimanjaro, as Mr. Johnston—who discovered the species—reports. On Mount Kenia Dr. Gregory, of the British Museum, during his adventurous and remarkable journey, met with it at a great altitude. It has also been found at Kisongo, south-east of Lake Victoria and in Unyamuezi, where Sir Richard Burton obtained it.

Habits.—The habits of the White-tailed Guereza are very similar to those of the foregoing; but it would appear to be much more of a mountain-loving animal than the latter. A creature so strikingly—even glaringly—ornamented might be supposed to be a very conspicuous object among its native forests. Dr. Gregory, however, has informed the present writer that, notwithstanding its distinctive coloration when examined in

the hand, he found it very difficult to detect it in its home amid the forest-trees at high altitudes, where all the branches are clothed with long grey-beard lichens, with which its fur very closely harmonizes. Mr. H. H. Johnston, in describing Mandara's soldiers, says: "On their heads were crescents made of ostrich feathers, or caps of the *Colobus* Monkey-skin. This last-mentioned animal also supplied them with mantles of long black and white fur, and contributed the heavily-plumed tails which these Çaga soldiers fixed on to that portion of their body where tails should rightly appear, if man had not dispensed with such appendages."

"The 'Polume,' as Dr. Livingstone calls this species, is in Uniamuezi known as the 'Mbega,' and is admired on account of its polished black skin and snowy-white mane. It is a cleanly animal, ever occupied in polishing its beautiful garb, which, according to the Arabs, it tears to pieces when wounded, lest the hunter should profit by it. The 'Mbega' lives in trees, seldom descending to the ground, and feeds upon fruits and young leaves." (*Burton.*)

THE LANGURS. GENUS SEMNOPITHECUS.

Semnopithecus, F. Cuv., Hist. Nat. Mammif. (1821).

Presbytis, Eschsch. Kotzeb. Entdeck. Reis., iii., p. 196 (1821).

The members of this genus have thin and elongated bodies, long limbs, and a very long and slender tail. The head is rounded, and shorter than in the Guenons; the muzzle short, depressed, and but little prominent. The thumb, although shorter than that digit among the Guenons and Macaques, is present in all the species, and forms a good prehensile finger with a flat nail. The hands and feet are long and narrow, and

the finger-nails convex; the great-toe is thick and well-developed. The callosities are small as compared with the Guenons; the fur is abundant, and generally long, soft, and often glossy; and over the eyes they have usually a ridge of stiff hairs projecting in front. The members of this genus, as already observed, have no cheek-pouches; they have, however, a large laryngeal sac formed and situated as described above (p. 84).

The skull is round; the eye-sockets large, with a very prominent superciliary ridge projecting over them; the space between the eyes is broad, and the lower jaw is deep. The upper molars are four-cusped, and the posterior lower molar five-cusped.

The Langurs are, when young, good tempered and easily tamed; but when old they become sulky and ill-natured. They live chiefly in forest regions, in troops of considerable size. "This genus is spread over almost the whole of the Oriental region wherever the forests are extensive. They extend along the Himalayas to beyond Simla, where a species has been observed at an altitude of 11,000 feet, playing among fir-trees laden with snow-wreaths. On the west side of India they are not found to the north of the 14th parallel of latitude. On the east they extend into Arakan, and to Borneo and Java, but not apparently into Cambodia. Along the eastern extension of the Himalayas they again occur in Eastern Thibet, a remarkable species (*S. roxellana*) having been discovered at Moupin (about lat. 32° N.), in the highest forests, where the winters are severe and where the vegetation is wholly that of the Palæarctic region." (*Wallace*.)

The total number of Monkeys inhabiting the islands of the Eastern Archipelago is, according to the most recent census, as follows: In Sumatra, 12; Banka, 4; Borneo, 14; Java, 5; Celebes, 2; Natuna, Bali, Lombok, Flores, Sumbawa, and Timor, 1 each; the Philippine and Sulu Archipelagos, 1 each.

I. BARBE'S LANGUR. SEMNOPITHECUS BARBII.

Presbytis barbei, Blyth, J. A. S. Beng., xvi., p. 734 (1847); id., Cat. Mamm. As. Soc. Mus., p. 14 (1863); id., Mamm. Burma, p. 11 (1875).

Semnopithecus barbei, Anderson, Zool. Res. Exped. Yun-nan, p. 12 (1878); id., Cat. Mus. Calc., p. 48; Blanford, Faun. Brit. Ind., Mamm., p. 39 (1891).

Characters.—Nearly related to *S. obscurus*. Hair on the side of the head, and in front of the ears, long, projecting outwards; that on the top of the head long and directed backwards; beard short; face almost nude, bluish-black; lips thinly furnished with short yellowish hairs. General colour of the body everywhere black, except on the shoulders, the fore-limbs to the wrist, the joint of the legs, the back and sides of the head, and tail, which are washed with pale grey. Length of body, 19½ inches; of tail, 29 inches. The adult female is similar in coloration to the male. In the skull the orbits are rounded, and the inter-orbital region elongated. Dr. Anderson observes: "The differences which exist in certain dimensions between the skulls of well-authenticated examples of the two sexes are far greater than are generally found in the same sexes of different species."

Distribution.—Northern Tippera hills; Assam; and Mount Mooleyit, in Tenasserim. Dr. Anderson observed it in the Valley of the Tapeng, in the centre of the Kachin hills in Upper Burma, and in the defile of the Irawaddy.

Habits.—This species inhabits the thick forest, and is found in troops of from thirty to fifty individuals, distributed, according to Dr. Anderson, over three or four high forest-trees overhanging the mountain streams. It is generally tame and fearless.

II. THE BONNETED LANGUR. SEMNOPITHECUS PILEATUS.

Semnopithecus pileatus, Blyth, J. A. S. Beng., xii., p. 174 (1843); xiii., p. 467 (1844); Wagner in Schreb. Säugeth. Suppl., v., p. 30, pl. xxvi., fig. 3 (1855); Hutton, P. Z. S., 1867, p. 946; Schl., Mus. Pays-Bas, vii., p. 57 (1876); Anderson, Zool. Exped. Yun-nan, p. 13 (1878); id., Cat. Mus. Calc., p. 40; Blanford, Faun. Brit. Ind., Mamm., p. 37, fig. 9 (1891).

Presbytis pileatus, Blyth, J. A. S. Beng., xvi., p. 735 (1847); id., Cat. Mamm. As. Soc. Mus., p. 12 (1863); id., Mamm. Burma, p. 11 (1875).

Semnopithecus potenziani, Bp., C. R., xliii., p. 412 (1856).

Presbytis chrysogaster, Licht.; Peters, P. Z. S., 1866, p. 429; Blyth, Mamm. Burma, p. 10 (1875).

Semnopithecus chrysogaster, Licht.; Peters, M. B. Akad. Berl., 1879, p. 830, pl. iv.b; id., P. Z. S., 1866, p. 429; Blanford, Faun. Brit. Ind., Mamm., p. 38 (1891).

Characters.—Nearly allied to *S. entellus*. Face flattened and black; muzzle long and broad; head without a crest; some long superciliary hairs projecting in front, black; whiskers long, running down to the chin, and projecting outwards and backwards, partly concealing the ears, and of a reddish-yellow colour; beard short, also reddish-yellow; hair on the top of the head longer than on the back of the head and temples, black or dark ashy-grey, washed, especially on the front of the head, with rufous; neck, back, upper part of arm, lower portion of the fore-arm, outside of the thighs, and tail (except the tufted tip, which is black), ashy-grey—all these parts being slightly washed with rufous; hands and feet, black; remainder of the limbs rufous; throat, chest, and fore part of the under surface, rich

orange-yellow, paler on the hind part of the belly and on the inner side of the limbs. Length of body, 18 inches ; of tail, 28½ inches, and with the tuft, 31 inches. Cranium globular ; supra-orbital ridges not prominent.

The young have the fur soft, silky, and rather long, and are much paler than the adults, and of a soft delicate grey, yellowish-white taking the place of the rufous colour of the adults. (*Anderson.*)

Distribution.—Northern Assam, Arracan, Upper Burma, and Tenasserim. Dr. Anderson observed a troop of this species at Tsingu Myo on the left bank of the Irawaddy, at the lower end of the first defile.

Habits.—This species lives in small troops in the forest. When young it is of a mild disposition ; but, when fully adult, the males are ill-natured and fierce.

III. THE HANUMAN LANGUR. SEMNOPITHECUS ENTELLUS.

L'entelle, Audeb., Singes, Fam. V., sect. ii., fig. 2 (1797).

Simia entellus, Dufresne, Bull. Soc. Philom., i., p. 49 (1797).

Cercopithecus entellus, Latr., Hist. Nat. Buff., xxxvi., p. 283 (1809).

Semnopithecus entellus, Desm., Dict. Class. H. Nat., vii., p. 568 (1825) ; Sykes, P. Z. S., 1831, p. 199 ; Blyth, J. A. S. Beng., xii. (1843), p. 169 ; xiii. (1844), p. 470 ; Hutton, P. Z. S., 1867, p. 944 ; Gray, Cat. Monkeys Brit. Mus., p. 14 (1870) ; Schlegel, Mus. Pays-Bas, vii., p. 60 (1876) ; Anderson, Rep. Zool. Exped. Yun-nan, p. 15 (1878 ; with full synonymy) ; Blanford, Faun. Brit. Ind., Mamm., p. 27 (1891).

Semnopithecus anchises, Elliot ; Blyth, J. A. S. Beng., xiii. (1844), p. 470 ; xvi. (1847), p. 733.

Presbytis entellus, Gray, Hand-List Brit. Mus., p. 4 (1843; in part); Blyth., *op. cit.*, xvi., pp. 732, 1271, pl. liv., fig. 1 1847; id., Cat. Mamm. As. Soc. Mus., p. 11 (1863); Jerdon, Mamm. Ind., p. 4 (1867).

Semnopithecus albogularis, Müll. u. Schl., Verh. Nat. Gesch., 1839-44, p. 58 (*fide Anderson*).

Characters.—Nearly allied to *S. schistaceus*. Crestless; hair on top of head radiating in all directions; ears large, whiskers short, not concealing the ears; prominent supra-orbital projecting hairs, black; face, ears, hands, and feet black. Head, body, limbs, and tail—which is a fourth longer than the body—pale yellowish-brown, darker on the shoulders and the outside of the limbs; under surface paler.

Female.—Smaller than the male.

Distribution.—According to Dr. Anderson, this species ranges from the Deccan northwards to the south bank of the Ganges; its distribution to the north-west, west, and south being uncertain.

Habits.—“Few, if any, wild animals,” observes Dr. Blanford, “afford better opportunities for observation than the Hanuman Monkey of Northern and Central India. Generally protected and looked upon as sacred by many of the Hindu inhabitants, it has no fear of Man, and may be found in groves near villages, or even on the village trees, as often as in the depths of the forest. In many parts of India it is a common occurrence to see these Monkeys on the roofs of houses. They frequently pilfer food from the grain-dealers’ shops, whilst the damage they inflict on gardens and fields, renders them a great nuisance to the natives. They feed on fruit and grain, but especially on

leaves and young shoots. They live in the high trees of the forest and near to water, or in rocky hills, in moderately-sized troops composed of males, females, young, and infants clasping their mothers. An old male is occasionally found solitary. Two communities often enter into deadly combat for possession of some fruit grove, an interesting account of one of which is given by Mr. J. Hughes in the 'Proceedings of the Asiatic Society of Bengal' for 1884." They are at all times very active. "Their voice," continues Dr. Blanford, whose account we have condensed, "is loud and is often heard, especially in the morning and evening. The two commonest sounds emitted by them are a loud, joyous, rather musical call, a kind of whoop generally uttered when they are bounding from tree to tree, and a harsh guttural note, denoting alarm or danger. The latter is the cry familiar to the tiger hunter, among whose best friends is the Hanuman. Safely ensconced on a lofty tree, or jumping from one tree to another as the tiger moves, the Monkey by gesture and cry points out the position of its deadly enemy in the bushes or grass beneath, and swears at him heartily."

The Hanuman is of very tender constitution, and cannot bear up against great changes of climate and temperature and necessarily of elevation; it is, therefore, entirely restricted to the warm lowland regions. There is, according to Captain T. Hutton, no true migration of this species from the upper to the lower districts of Bengal, as has been stated. "I am inclined," writes this observer, "to restrict its range, somewhat loosely perhaps, to between 10° and 25° N. lat. and 75° to 88° E. long., forming with the line drawn across the country from Allahabad to Boondie, a triangular range entirely south of the rivers Jumna and Ganges."

IV. THE HIMALAYAN LANGUR. SEMNOPITHECUS
SCHISTACEUS.

Semnopithecus entellus (nec Dufr.), Hodgs., P. Z. S., 1834, p. 95; Ogilby, Madr. Journ., xii., p. 144 (1840).

Semnopithecus schistaceus, Hodgs., J. A. S. Beng., ix., p. 1212 (1840); Schl., Mus. Pays-Bas, vii. p. 6 (1876); Anderson, Zool. Exped. Yun-nan, p. 16 (1878; with full synonymy); Blanford, Faun. Brit. India, Mamm., p. 30 (1891).

Semnopithecus nepalensis, Hodg., J. A. S. Beng., ix., 1840, p. 1212.

Presbytis entellus (nec Dufr.), Gray, Cat. Hodgs. Mamm. Nepal, p. 1 (1846); id., Cat. Monkeys Brit. Mus., pp. 14 and 15 (1870).

Presbytis schistaceus, Blyth, Cat. Mamm. As. Soc. Mus., p. 11 (1863); Jerdon, Mamm. India, p. 6 (1867); Blanford, J. A. S. Beng., xli., 1872, p. 32.

Characters.—Fur long; hair radiating on the crown; hair of cheeks long, hiding the small ears; tail slightly tufted; top and sides of head pale yellow, or whitish; face and ears, palms and soles black; back, sides, outside of limbs, tail, hands, and feet, dark slaty, or greyish-brown, sometimes washed with purple.

Aged specimens are grey or white on the head; young ones often have the feet darker than the adult.

Facial portion of the skull longer and the superciliary ridges less projected forward than in *S. entellus*. The nasal bones project beyond a line from the supra-orbital ridge to the front border of the pre-maxillaries; in *S. entellus* they do not project beyond it.

Distribution.—The Himalayas, from Kashmir to Bhutan from

5,000 to 12,000 feet above the sea, this species taking the place in those high altitudes of the lowland *S. entellus*.

Habits.—Similar to those of the Hanuman. According to Dr. Blanford, Capt. Hutton has observed it near Simla, at 11,000 feet, sporting amongst the fir-trees that were loaded with snow-wreaths at the time. "But," writes Dr. Anderson, "there is no evidence that any species of Monkey in the Himalaya is naturally resident at those heights at which snow annually lies, as was supposed by Hodgson, and it is the rarity of their occurrence at these high elevations, and during winter, that has directed so much attention to their hibernal wanderings. In the summer, they are much more widely distributed than in the winter, when, as a rule, they are driven to lower heights and into the warmer valleys."

V. THE MADRAS LANGUR. SEMNOPITHECUS PRIAMUS.

Semnopithecus priam, Elliot, MSS. ; Blyth, J. A. S. Beng., xiii, p. 470 (1844).

Semnopithecus pallipes, Blyth, Ann. and Mag. N. H., 1844, p. 312.

Presbytis priamus, Blyth, J. A. S. Beng., xvi., pp. 732, 1271, pl. liv. (1847); xx., p. 313 (1851); id., Cat. Mamm. As. Soc. Mus., p. 12 (1863); Kelaart, Prod. Faun. Zeylan., p. 3 (1852); Jerdon, Mamm. India, p. 7 (1867).

Semnopithecus albipes, Is. Geoffr., Cat. Méth. Primates, p. 14 (1851); Gray, Cat. Monkeys Brit. Mus., p. 15 (1870); Anderson, Zool. Res. Exped. Yun-nan, p. 18 (1878).

Semnopithecus priamus, Blanford, Faun. Brit. Ind., Mamm., p. 31 (1891); Anderson, Zool. Exped. Yun-nan, p. 19 (1878; with full synonymy).

Presbytis thersites, Tennent, Ceylon, p. 132, plate, fig. 1 (1860).

Characters.—Nearly allied to *S. entellus*. Hair on head indistinctly radiated; back of head crested longitudinally; supra-orbital hairs very long and projecting forward; ears large, not hidden by the whiskers. Fur long; face and ears black; back, sides, outer aspect of fore-limbs, upper part of the thigh, and the tail, ashy-grey, or earthy-brown, sometimes slightly washed with purple; sides of the head, nape, lower half of the thighs, hands, and feet, yellowish, as also the under surface of the body and inside of the limbs. Length of body, 21 inches; tail, 28 inches.

Distribution.—The Coromandel coast of India, ascending to 6,000 feet; Ceylon, from the north as far as the Kandyan hills in the south.

Habits.—The same as those of *S. entellus* and *S. schistaceus*.

This species inhabits the northern and eastern provinces of Ceylon, and the wooded hills which occur in these portions of the island. In appearance it differs both in size and in colour from the common Wanderoo, being larger and more inclined to grey; and in habits it is much more reserved. At Jaffna, and in other parts of the island, where the population is comparatively numerous, these Monkeys become so familiarised with the presence of Man as to exhibit the utmost daring and indifference. A flock of them will take possession of a Palmyra palm; and so effectually can they crouch and conceal themselves among the leaves that, on the slightest alarm, the whole party becomes invisible in an instant. The presence of a Dog, however, excites such an irrepressible curiosity that, in order to watch his movements, they never fail to betray themselves.

They may be frequently seen congregated on the roof of a native hut.

The Singhalese have the impression that the remains of a Monkey are never to be found in the forest; a belief which they have embodied in the proverb that "he who has seen a white Crow, the nest of a paddi bird, a straight coco-nut tree, or a dead Monkey, is certain to live for ever." This piece of folklore has evidently reached Ceylon from India, where it is believed that persons dwelling on the spot where a Hanuman Monkey, *Semnopithecus entellus*, has been killed, will die, and that even its bones are unlucky, and that no house erected where they are hid underground can prosper; and Buchanan observes that "it is perhaps owing to this fear of ill-luck that no native will acknowledge his having seen a dead Hanuman."

VI. THE MALABAR LANGUR. SEMNOPITHECUS HYPOLEUCUS.

Semnopithecus hypoleucos, Blyth, J. A. S. Beng., x., p. 839 (1841); xiii., p. 470 (1844); Anderson, Res. Zool. Exped. Yun-nan, p. 20 (1878; with full synonymy); Blanford, Faun. Brit. India, Mamm., p. 33 (1891).

Semnopithecus johnii, var., Martin, Mammif. Anim., p. 489 (1841); Gray, Cat. Monkeys Brit. Mus., p. 14 (1870).

Semnopithecus dussumieri, Is. Geoffr., C. R., xv., p. 719 (1842); id., Descr. An. Nouv. Fam. des Singes, p. 54, pl. xxx.; id., Cat. Méth. Primates, p. 13 (1851); Schl., Mus. Pays-Bas, vii., p. 62 (1876).

Presbytis hypoleucos, Blyth, J. A. S. Beng., xvi. (1847), p. 733.

Presbytis johnii (nec Fischer), Blyth, J. A. S. Beng., xxviii., p. 283 (1859); id., Cat. Mam. As. Soc. Mus., p. 12 (1863); Jerd., Mamm. India, p. 7 (1867).

Characters.—Similar to *S. entellus*. No crest; hair radiating on crown; back, sides, posterior aspect of thighs and tail dusky brown, darker on the middle of the back; fore-arm, front of thighs, and lower portion of legs, black; head dirty yellow; under surface yellowish-white; face, hands, and feet, black. Length of body, 21 inches; of tail, 32 inches.

Young.—Sooty-brown.

Distribution.—The forests and woods near cultivation along the Malabar coast of India, below 1,500 feet.

Habits.—Same as those of the Hanuman. It is, however, rather more shy.

VII. THE NILGIRI LANGUR. SEMNOPITHECUS JOHNI.

Simia johnii, Fischer, Syn. Mamm., i., p. 25 (1829).

Semnopithecus cucullatus, Is. Geoffr. in Bélang. Voy. Zool., pp. 38, 72, pl. i. (1834); Wagner in Schreber Säugeth. Suppl., i., p. 98 (1846); Gray, Cat. Monkeys Brit. Mus., p. 14 (1870).

Semnopithecus johnii, Waterh., Cat. Mamm. Mus. Zool. Soc., p. 5 (1838); Anderson, Res. Zool. Exped. Yun-nan, p. 21 (1878; with synonymy); Blanford, Fauna Brit. Ind., Mamm., p. 33 (1891); Schl., Mus. Pays-Bas, vii., p. 50 (1876).

Semnopithecus jubatus, Wagner in Schreb. Säugeth. Suppl., i., p. 305 (1840); Horsf., Cat. Mamm. E. Ind. Co. Mus., p. 14 (1851).

Semnopithecus cephalopterus, Blyth, J. A. S. Beng., xiii., p. 469 (1844; in part).

Presbytis johnii, Blyth, J. A. S. Beng., xvi., pp. 734, 1272 (1847)

Presbytis cucullatus, Blyth, J. A. S. Beng., xxviii., p. 283 (1859); id., Cat. Mamm. As. Soc. Mus., p. 14 (1863).

Presbytis jubatus, Jerd., Mamm. India, p. 7 (1867).

Characters.—Hair long and glossy, entirely black or brownish-black ; hairs of crown and sides of head very long, not radiating, yellowish-brown ; lower back and root of tail grey. Length of body, 26 inches ; of tail, 30 inches ; a very large individual measured, body, 29 inches ; tail, 37. (*Hornaday.*)

Nearly allied to the next species (*S. cephalopterus*) of Ceylon, and *S. obscurus*, which inhabits the eastern side of the Bay of Bengal.

Female.—With a yellowish-white patch inside each thigh. (*Davison.*)

Distribution.—In the thick, sharply circumscribed woods of the Nilgiri hills, south to Cape Comorin, above 2,500 feet.

Habits.—This species lives in small troops of ten to twelve individuals, and is remarkable for the extraordinary leaps it can make. "It is shy and wary, the result," as Dr. Blandford states, "of human persecution. It is very noisy, having a loud guttural alarm cry, used also to express anger, and a long loud call." Jerdon relates "that when the sholas of the Nilgiri range were beaten for game, these Monkeys made their way rapidly, and with loud cries, to the lowest portion, and thence to a neighbouring wood at a lower level. In consequence of the beauty of their skins, and the circumstance that certain castes eat their flesh, these Monkeys are more frequently shot than most of the Indian species : hence their shyness."

VIII. THE PURPLE-FACED LANGUR. SEMNOPITHECUS
CEPHALOPTERUS.

Cercopithecus vetulus, Erxl., Syst. Rég. An., Mamm., p. 25
(1777 ; in part).

Cercopithecus senex, Erxl., *t.c.*, p. 24 (1777); Zimm., Geogr. Gesch., ii., p. 183 (1780); Blanford, Faun. Brit. Ind., Mamm., p. 35 (1891).

Cercopithecus kephalopterus, Zimm., *op. et t.c.*, p. 185 (1780); Bodd., Elench. An., p. 58 (1785); Fischer, Syst. Mamm., p. 17 (1829).

Simia veter, Shaw, Gen. Zool., i., p. 36 (1800).

Cercopithecus leucoprymnus, Otto, N. Acta. Acad. Cæs. Leop., xii., p. 505, pl. xlv. *bis* (1825).

Semnopithecus fulvo-griseus, Desmoul., Dict. Class. Hist. Nat., vii., p. 570 (1825); Geoffr., C. R., xv., p. 719 (1842).

Semnopithecus leucoprymnus, Desmaret, Dict. Sci. Nat., xlviii., p. 439 (1827); Wagner, in Schreber, Säugeth. Suppl., v., p. 25 (1825); Gray, Cat. Monkeys Brit. Mus., p. 14 (1870).

Macacus silenus, var. *alba*, Fischer, Syn. Mamm., 1829, p. 28.

Semnopithecus nestor, Bennett, P. Z. S., 1833, p. 67; Waterh., P. Z. S., 1844, p. 1.

Presbytes cephalopterus, Gray, Hand-List Mamm., p. 4 (1843); Blyth, J. A. S. Beng., xvi., pp. 734, 1271 (1847); Kelaart, Prodr. Faun. Zeylan., p. 1 (1852); Tennent, Ceylon, p. 5, plate, fig. 3 (1861); Blyth, Cat. Mamm. Mus. As. Soc. Beng., p. 13 (1862).

? *Presbytis thersites*, Elliot MSS.; Blyth, J. A. S. Beng., xvi., p. 1271, pl. liv., fig. 3 (1847); Blanford, P. Z. S., 1887, p. 626 (1891).

Presbytis albinus, Kelaart, Faun. Zeylan., p. 7. (1852).

Semnopithecus cephalopterus, Martin, Mammif. An., p. 482 (1841); Schlegel, Mus. Pays-Bas, vii., p. 51 (1876); Anderson, Rep. Zool. Exped. Yun-nan, p. 22 (1878; full synonymy); Blanford, Faun. Brit. Ind., Mamm., p. 34 (1891).

Semnopithecus kelaartii, Schl., Mus. Pays-Bas, vii., p. 52 (1876).

Characters.—Hair of crown not radiating; top of head and nape dusky-brown; back and limbs darker smoky-brown; lower back, base of tail, and upper posterior surface of thighs varying from ashy-grey to greyish-white, washed, in immature specimens, with brown; hands and feet black; supra-orbital hairs black, projecting outwards, extending nearly to the ears; the long and conspicuous whiskers white, concealing the base of the ears, and forming a sort of ruff, encircling the face; chin and throat white. Face purplish-black. Tail beyond the base dark grey, tufted at the tip and whitish. Under surface dusky-grey; inner sides of the thighs anterior to the callosities pale yellow or white. Length of body, 21 inches; tail, 31 inches.

Young.—Generally similar to the parents. A young female from Ceylon examined by Dr. Anderson was uniform pale-yellowish, the top of the head slightly washed with brownish, and the shoulder and mid-back washed with dusky.

A white variety (*S. senex*) sometimes occurs. "There can be no doubt," says Dr. Anderson, "that *S. cephalopterus*, *S. ursinus*, and *S. johni* are extremely closely allied to each other"; and indeed it is doubtful whether they are not local races of the same species.

Distribution.—The island of Ceylon.

Habits.—Sir E. Tennent, in his "Natural History of Ceylon," has given the following account of this species:—

"Although common in the southern and western provinces, this Monkey is never found at a higher elevation than 1,300 feet. It is an active and intelligent creature, little larger than the common Bonneted Macaque, and far from being so mis-

chievous as others of the Monkeys in the island. In captivity it is remarkable for the gravity of its demeanour, and for an air of melancholy in its expression and movements which are completely in character with its snowy beard and venerable aspect. In disposition it is gentle and confiding, sensible in the highest degree of kindness, and eager for endearing attention, uttering a low, plaintive cry when its sympathies are excited. It is particularly cleanly in its habits when domesticated, and spends much of its time in trimming its fur, and carefully divesting its hair of particles of dust.

“Those which I kept at my house near Colombo were chiefly fed upon plantains and bananas, but for nothing did they evince a greater partiality than the rose-coloured flowers of the red Hibiscus (*H. rosa-sinensis*). These they devoured with unequivocal gusto; they likewise relished the leaves of many other trees, and even the bark of a few of the more succulent ones.

“A White Monkey, taken between Ambepusse and Korne-galle, where they are said to be numerous, was brought to me to Colombo. Except in colour, it had all the characteristics of *Presbytes cephalopterus*. So striking was its whiteness that it might have been conjectured to be an albino, but for the circumstance that its eyes and face were black. I have heard that White Monkeys have been seen near the Ridi-galle Wihara in the Seven Korales, and also at Tangalle; but I never saw another specimen. The natives say they are not uncommon, and Knox states that they are ‘milk-white both in body and face; but of this sort there is not such plenty.’ The Rev. R. Spence Hardy mentions, in his learned work on ‘Eastern Monachism,’ that on the occasion of his visit to the great temple of Dambool, he encountered a troop of White Monkeys

on the rock in which it is situated—which were, doubtless, a variety of the Wanderoo. Pliny was aware of the fact that White Monkeys are occasionally found in India.

“When observed in their native wilds, a party of twenty or thirty of these creatures is generally busily engaged in the search for berries and buds. They are seldom to be seen on the ground, except when they may have descended to recover seeds or fruit which have fallen at the foot of their favourite trees. When disturbed, their leaps are prodigious; but, generally speaking, their progress is made, not so much by *leaping*, as by swinging from branch to branch, using their powerful arms alternately; and when baffled by distance, flinging themselves obliquely so as to catch the lower boughs of an opposite tree, the momentum acquired by their descent being sufficient to cause a rebound of the branch, that carries them up again, till they can grasp a higher and more distant one, and thus continue their headlong flight. In these perilous achievements, wonder is excited, less by the surpassing agility of these little creatures, frequently encumbered as they are by their young, which cling to them in their career, than by the quickness of their eye, and the unerring accuracy with which they seem almost to calculate the angle at which a descent will enable them to cover a given distance, and the recoil to attain a higher altitude.”

IX. PAITAN LANGUR. SEMNOPITHECUS SABANUS.

Semnopithecus sabanus, Thomas, Ann. & Mag. Nat. Hist. (6), xii., p. 230, pl. vii. (head), (1893).

Characters.—Allied to *S. hosii*, *S. everetti*, and *S. thomasi*. Body, tail, and limbs grey; forehead with a high vertical median crest, commencing on the brow, black, with some white



HOSE'S LANGUR.

hairs ; superciliary bristles long, black, projected forward over the eyes ; hairs of the forehead on each side of the crest, flat against the head, white over the whole crown (with a few black hairs), but darker tipped on the back of the head ; sides of the face from the orbits to the ears quite black ; occipital hairs directed backward, not forward as in *S. thomasi*. Chin, sides of neck, throat, and chest greyish, not white as in the allied species. Under side of the body and inner side of the upper arms, and the legs to the ankles white, becoming greyer distally ; hands and feet shining black ; fore-arms to the wrists, and legs to the ankles, grizzled grey, as also the tail, above and below. Skin of face probably flesh-coloured between and across the orbits and round the cheeks, elsewhere black. Length of body, $23\frac{1}{2}$ inches ; tail, 30 inches.

Cranium broader and rounder than in the allied species ; the ascending process of the maxillary bones articulating with the frontals, shutting out the former bones from the side of the nasals. In the allied species the skin of the face is nearly, or quite, black all over, and the chin, sides of the neck, the throat, and the chest are pure white.

Distribution.—Paitan, N. Borneo. Discovered by the veteran Bornean traveller Alfred Everett.

X. HOSE'S LANGUR. SEMNOPITHECUS HOSII.

(*Plac XXXV.*)

Semnopithecus hosii, Thomas, P. Z. S., 1889, p. 159, pl. xvi. ;
Hose, Mamm. Borneo, p. 10 (1893).

Characters.—Crown with a longitudinal central crest, the hairs sloping evenly backward, with no reversed tuft of hair on the back of the head ; general colour of back, shoulders, outer sides of limbs, and tail (though darker above than below)

hoary grey, the hairs being commingled black and white; crest, centre of crown, and nape deep glossy black; all the rest of the head, forehead, temples, sides of crown and neck, cheeks, lips, septum of nose, tufted chin, front of neck, chest, under side of body and the inside of the limbs as far as the middle of the fore-arm and lower leg pure white; hands and feet deep black; face black.

Nasal bones long and thin, the profile quite straight and continuous with the line of the forehead. Length of body, 20½ inches; of tail, 26¼ inches. (*Thomas.*)

This handsome species differs from all known *Semnopithec*i in the marked contrast in colour presented by its black crest and white forehead and cheeks.

Distribution.—Niah, in the Baram district; Mount Dulit, Mount Batu Song: all in Sarawak, Borneo.

Habits.—"The type of this Monkey—the Bangat of the Kayans—was shot," writes Mr. Charles Hose (after whom the species is named), "at a place called Niah, in the Baram district. I have procured several specimens in different parts of the country, but although it is often seen in the low country, I think we must consider it to be a mountain species, which leaves the mountains at certain times in search of fruit. It ascends Mount Dulit to the height of 4,000 feet, but is more common at 2,000 feet. It frequents the salt-springs, which are common in the interior, churning up the mud, and it is at these salt-springs that the Punans procure numbers of specimens with the blow-pipe and poisoned arrows. From this Monkey the Bezoar stones are obtained, being found either in the gall bladder or the intestines. The noise that the animal makes is loud and distinct—*Gageh*, *gagah*. The young

resemble the colour of the adult, and are exceedingly pretty little things, but they do not live long in confinement, and would never bear a voyage to England, as they suffer severely from sea-sickness."

XI. THOMAS'S LANGUR. SEMNOPITHECUS THOMASI.

Semnopithecus thomasi, Collett, P. Z. S., 1892, p. 613, pl. xlii.

Description.—A central occipital crest sloping at first backwards, reversed on the back of the head, black on the crown; with a lower indistinct crest on each side of the white forehead. General colour above dark grey—each hair being partly black and partly white; underneath, white; a black stripe from the upper jaw to the ear, and a black central stripe on the forehead; hands and feet black. (*Collett.*)

Very old males are darker in colour, with the upper part of the head brownish-black, the front whitish. Old females are smaller; the young are silky and nearly white all over.

Closely related and very similar to *S. hosii*, but the cheeks do not form a connected white area with the white forehead, the space being broken by a black band from the edge of the mouth to the ear (in the young male and in the female). In the old male the upper parts of the cheeks are quite black. Length of body, $24\frac{1}{2}$ inches; tail, about 32 inches.

Distribution.—The present species was discovered in the Langkat district in the North-east of Sumatra, by Mr. Iversen, a Norwegian traveller in that island, and is named after Mr. Oldfield Thomas, the well-known Mammalogist of the British Museum.

Habits—These Monkeys live in small companies composed of both sexes, in the highest trees in dry spots of the forest, never descending of their own accord to the ground, nor visit-

ing the rice-fields, as their food appears to consist exclusively of fruits. They may be met with, according to Mr. Iversen, the discoverer of this species, at all seasons of the year in the same parts of the forest. They hardly ever visit the more open places, but keep to the highest tree-tops, and make most astonishing leaps from one branch to another. Those observed were very shy, and, on being perceived, would seek to hide in the leafy tops of the trees, even leaving their young exposed on the lower branches. The mother carries her young one under her belly. The species was often observed in company with the Siamang (*Hylobates syndactylus*), but not with other Monkeys.

XII. EVERETT'S LANGUR. *SEMNOPITHECUS EVERETTI*.

Semnopithecus everetti, Thomas, P. Z. S., 1892, p. 582, pl. xli.;
Hose, Mamm. Born., p. 15 (1893).

(Plate XXXI I.)

Characters.—Very closely allied and very similar to *S. hosii* in size and coloration, but the white is everywhere replaced by dull cream-colour, giving a yellowish wash to the mixed grey of the back and tail; shoulders and middle of back darker; under surface of body and light parts of head cream-colour, instead of white; whole of the forehead and top of the head black, the lower limit of the black passing across the middle of the ear; entire back of neck black; spot in the centre of the forehead above where the eyebrows meet, yellowish-white. The colour of the face, cheeks, and sides of the neck, in contrast to the dark crown, distinguish this species from *S. chrysomelas*. Length of body, $21\frac{3}{4}$ inches; of tail, $25\frac{3}{4}$ inches. (Thomas.)

"Since Mr. Thomas described this Monkey," writes Mr. C. Hose in his "Mammals of Borneo," "I have obtained several



EVERETT'S LANGUR.

other specimens, . . . and the marking is quite constant."

Distribution.—Borneo: Mount Kina Balu. Mount Dulit and Mount Batu Song in Sarawak, ranging from 3,000 to 3,500 feet above the sea.

Habits.—This species is a purely mountain form, and does not descend to the plains

XIII. THE CROSS-BEARING LANGUR. SEMNOPITHECUS
CRUCIGER.

Semnopithecus cruciger, Thomas, Ann. N. H. (6), x., p. 475 (1892); id., P. Z. S., 1893, p. 3; Hose, Mamm. Borneo, p. 15 (1893).

Characters.—Fur long and soft on the head and shoulders; hairs of the crown standing upright everywhere, but somewhat longer in the median line; crown chestnut; sides of the body from the axillæ, the haunches, and the outer aspect of the legs to the ankles, brilliant red, paler on the lower legs; shoulders and outer side of the fore-limb, the hands, nape, and median dorsal line, deep glossy black, sometimes broken with red and black hairs; eyebrows black; short facial hairs, whiskers, hair of the ears, the sides of the neck, chin, and the whole of the under side of the body, and lines down the inner sides of the limbs, glossy white, washed with yellow; tail at the base above, black, and duller at the tip.

The young are marked like the adults.

Distribution.—Borneo; Bakam, in the Baram district of Sarawak, where it was discovered by Mr. Charles Hose. He has since obtained it on the Batang Lupar river, in Western Sarawak,

XIV. THE URSINE LANGUR. SEMNOPITHECUS URSINUS.

Presbytis ursinus, Blyth, J. A. S. Beng., xx., pp. 155, 182 (1851 ; id., Cat. Mamm. As. Soc. Mus., p. 13 (1863); Kelaart, Prod. Faun. Zeylan., p. 2 (1852).

Semnopithecus ursinus, Anderson, Rep. Zool. Res. Exped. Yun-nan, p. 24 (1878); Blanford, Faun. Brit. Ind. Mamm., p. 36 (1891).

Characters.—Very nearly allied to *S. cephalopterus*, but larger; hair on the sides very long. Hair more rufous on the top of the head; the back of the head greyish; the lower back and thighs wanting the grey colour; whiskers, beard, throat, and chest, whitish; beneath, of the same colour as the back.

Distribution.—The island of Ceylon, where it is confined to the mountains.

Habits.—For an account of the habits of this species, we have again recourse to the pages of that delightful historian, Sir E. Tennent:—

“The low-country Wanderoo,” he records, “is replaced in the hills by the larger species, *P. ursinus*, which inhabits the mountain zone. The natives, who designate the latter the ‘Maha,’ or Great Wanderoo, to distinguish it from the ‘Kaloo,’ or black one, with which they are familiar, describe it as much wilder and more powerful than its congener of the lowland forests. It is rarely seen by Europeans, this portion of the country having, till very recently, been but partially opened; and even now it is difficult to observe its habits, as it seldom approaches the few roads which wind through these deep solitudes. At early morning, ere the day begins to dawn, its loud and peculiar howl, which consists of a quick repetition of the sounds ‘*How, how!*’ may be frequently heard in the

mountain jungles, and forms one of the characteristic noises of these lofty situations. It was first captured by Dr. Kelaart in the woods near Nuera-ellia, and from its peculiar appearance it has been named *P. ursinus* by Mr. Blyth."

XV. THE DUSKY LANGUR. SEMNOPITHECUS OBSCURUS.

Semnopithecus obscurus, Reid, P. Z. S., 1837, p. 14; Martin, Mammif. An., p. 486 (1841); Murie, P. Z. S., 1865, p. 742; Gray, Cat. Monkeys Brit. Mus., p. 14 (1870); Schl., Mus. Pays-Bas, vii., p. 49 (1876); Anders., Zool. Res. Yun-nan Exped., p. 25 (1878; with full synonymy); Thomas, P. Z. S., 1886, p. 66; Blanford, Faun. Brit. Ind., Mamm., p. 41 (1891).

Semnopithecus leucomystax, Müll. and Schl., Verhandl., p. 59 (1839-44).

Semnopithecus albocinereus, Less., Sp. Mammif., p. 65 (1840).

Presbytis obscura, Gray, Hand. List Mamm. Brit. Mus., p. 3 (1843); Blyth, J. A. S. Beng., xiii., p. 467 (1844).

Semnopithecus halonifer, Cantor, Proc. Linn. Soc., 1845, p. 235.

Characters.—Hair on crown not radiating; longer at the back, forming a tuft of yellowish-white. Body blackish-brown, darker on the forehead, sides of face, sides of body and limbs; hands and feet black; nape of neck, and along the middle of back, brownish; tail brownish, not tufted; under surface and inside of limbs not so dark as the back or sides; face black, but the mouth and eyelids whitish; length of body, 21 inches; of tail, 32 inches.

Female.—Slightly browner than the male.

Young.—Bright golden-red, but very soon changing to the colour of the adult.

Mr. Thomas mentions (P. Z. S., 1886, p. 66) a very remarkably coloured individual, differing from all others in having its crest, nape, arms, legs, and tail, yellow, contrasting markedly with the dark hues of the face, body, and feet. It is, however, approached by a specimen in the British Museum from Malacca, collected by Dr. Cantor, which has the crest yellow, and the limbs and tail lighter than usual. Its auditory bullæ, however, are larger and more projecting, and its teeth smaller than is usually the case with *S. obscurus*.

Distribution.—Siam; the Malayan Peninsula; Tenasserim, Mt. Mooleyit, at 5,000 feet.

XVI. ANDERSON'S LANGUR. *SEMNOPTHECUS HOLOTEPHREUS*.
Semnopithecus holotephreus, Ander., Zool. Res. Exped. Yun-nan, p. 27 (1878).

Characters.—"Uniform dark slaty-grey passing into black on the fore-arm and hands, and also on the feet. Under surface and inner side of the fore-limbs and thighs, pale yellowish-grey. Head slightly crested over the vertex, but with only a feeble tendency to lateral compression. Supra-orbital hairs moderately long and black. Whiskers rather long, directed backwards and outwards, hiding the ears in front. Face bluish-black; area round the eyes and lips white. Length of body, 21½ inches; tail, 24½ inches." (*Anderson*.)

Distribution and Habits.—Unknown.

XVII. GERMAIN'S LANGUR. *SEMNOPTHECUS GERMAINI*.
Semnopithecus germaini, Milne-Edwards, Bull. Soc. Philom., Séance, 12, Feb., 1876; Anderson, Zool. Res. Exped. Yun-nan, p. 27 (1878); Schl., Mus. Pays-Bas, vii., p. 34 (1876).

Characters.—Body blackish, washed with pale silvery-grey; hands and feet black. Supra-orbital hairs, projecting outwards and backwards, black; whiskers, long and grey; hairs of flanks, long and grey; tail, grey; under surface, grey

Young.—"Bright orange-yellow; top of head, fore-arm, and feet, blackish." (*Anderson.*)

Distribution.—Cochin-China, where it was discovered by M. Germain.

XVIII. THE NEGRO LANGUR. SEMNOPITHECUS MAURUS.

Simia maura, Schreber, Säugeth., i., p. 107, pl. xxii. B. (1775); Shaw, Gen. Zool., i., p. 47 (1800).

Cercopithecus maurus, Erxleben, Syst. Rég. Anim., p. 41 (1777).

Simia cristatus, Raffles, Tr. Linn. Soc., xiii., p. 245 (1822).

Semnopithecus maurus, F. Cuv., Hist. Nat., Mamm., pl. xii. (1822); Wagner, in Schreber, Säugeth. Suppl., v., p. 23 (1855); Gray, Cat. Monkeys Brit. Mus., p. 15 (1870); Schl., Mus. Pays-Bas, vii., p. 54 (1876); Anderson, Zool. Res. Exped. Yun-nan, p. 27 (1878; with full synonymy).

Semnopithecus pyrrhus, Horsfield, Zool. Res. Java, plate (1821); Schl., Mus. Pays-Bas, vii., p. 50 (1876).

Semnopithecus pruinosus, Desmar., Mammolog., 1820, Suppl., p. 333; Schl., Mus. Pays-Bas, vii., p. 58 (1876); Jentink, Notes Leyd. Mus., xi., p. 215, pl. ix. (1887); id., *op. cit.*, xiii., p. 207 (1891).

Simia ceylonicus, Desmoul., Dict. Class. Hist. Nat., vii., p. 572 (1825).

Semnopithecus cristatus, Müll., Tijds. V. Nat. Gesch., ii., p. 316 (1835); Müll. et Schl., Verhandl., pp. 61, 77, p^l. 12, fig. 1 (young; 1839-44); Gray, Cat. Monkeys Brit. Mus., p. 15 (1870); Anderson, Zool. Res. Exped. Yun-nan, p. 29 (1878); Hose, Mamm. Borneo, p. 15 (1893).

Characters.—Hair radiating from a centre, or divergent all round the face, which is reddish-black; long and bushy whiskers on the sides of the face and passing behind the ears. Hair generally long. General colour all over, deep black, the hairs tipped with silver-grey in aged individuals; spot at the under side of the base of the tail white. Length of body, 17½ inches; of tail, 23½ inches.

Young.—Uniform reddish-brown, changing soon to the colour of the adult; the rufous vanishing from the whiskers last of all. The colour of the young is said especially to be the case in females only, and to persist through life; but, as Dr. Anderson remarks, it is not a common variety, and such coloured adults are highly prized in Java.

Distribution.—Malay Peninsula. Sumatra; Padang, Bencoolen, the Lampongs. Java. Billiton. Borneo; on the Baram river, and also on Mt. Dulit.

Habits.—These Monkeys ascend the mountains in Borneo to about 2,000 feet; they are also fairly common in the low country, and are called by the Dyaks "Bigok," and by the Kayans "Chikok," from the noise they make. (*C. Hose.*)

XIX. THE BANDED LANGUR. SEMNOPITHECUS FEMORALIS.

Simia maura, Raffles (nec. Schreb.), Tr. Linn Soc., xiii., p. 247 (1822).

Semnopithecus femoralis, Horsf. App. Life Raffl., p. 643 (1830); Martin, Mammif. An., p. 480 (1841; in part); Horsf., Cat. Mamm. E. I. Co. Mus., p. 10 (1851); Schl., Mus. Pays-Bas, vii., p. 45 (1876); Anderson, Zool. Res. Exped. Yun-nan, p. 30 (1878; with full synonymy); Thomas, P. Z. S., 1886, p. 66; Blanford, Faun. Brit. Ind., Mamm., p. 42 (1891); Hose, Mamm. Borneo, p. 13 (1893).

Semnopithecus chrysomelas, Müll. Tijds., Nat. Ges., v., p. 138, plate (1838); Wagner, in Schreb., Säugeth. Suppl., v., p. 22 (1855; in part).

Semnopithecus sumatranus, Müll. und Schl. Verh., pp. 6, 73, pl. 10 bis, fig. 1 (1839-44).

Simia femoralis, Cantor, J. A. S. Beng., xv., p. 175.

Characters.—Head with a rather short vertical crest directed backward, and the hair in front directed forward over the eyes. The dominant colour is brownish-black, replaced by white on the hinder part of the belly and tail, which is slightly tufted at the tip, and more or less on the inner side of both limbs, and on the centre of the chest. Face, ears, palms, and the sides of the feet, black.

Young.—Similar to the adults, but the throat, chest, abdomen, yellowish-white.

Distribution.—The islands of Sumatra and Borneo.

Habits.—This is a low-country Monkey, according to that excellent observer Mr. C. Hose, and is seldom to be found on the mountains, and then only up to about 1,000 feet. It is fond of living near the seashore, and is generally found, in numbers of from ten to thirty, sitting on the branches of tall trees in open spaces. Its Dyak name is "Bigit," and its Kayan name "Pant."

Very nearly related to this species, if indeed it be really distinct, is the GOLDEN LANGUR, or Lotoong of the Malays, *S. AURATUS*, Geoffr. (Ann. Mus., xix., p. 93, 1812), which is synonymous with the *S. chrysomelas* of Wagner, for the two agree in every respect except that the latter is lighter coloured, and has black hairs intermixed among the yellowish hairs on its head, tail, and limbs.

Professor Schlegel has (Mus. Pays-Bas, vii., p. 47) separated a specimen from Singapore, and closely related to *S. femoralis*, as a distinct species, under the name of *S. NEGLECTUS*. It is easily distinguished, as he points out, by the general hue of its fur being black turning insensibly into greyish-brown, speckled here and there with white; in the middle line of the chest, on the lower belly, and on the inner side of the fore-arm, and thighs alone, is there any white; this and the uniformly dark tail distinguish *S. neglectus* from *S. femoralis* and *S. chrysomelas*.

XX. THE MAROON LANGUR. SEMNOPITHECUS RUBICUNDUS.

Semnopithecus rubicundus, Müller, Tijdschr., Nat. Gesch., v., p. 137, cum tab. (1838); Martin, Mammif. An., p. 473 (1841); Gray, Cat. Monkeys Brit. Mus., p. 17 (1870); Anderson, Zool. Res. Exped. Yun-nan, p. 33 (1878; with synonymy); Schl., Mus. Pays-Bas, vii., p. 36 (1876); Hose, Mamm. Borneo, p. 9 (1893).

Characters.—Differs from *S. rubicundus* in its rich deep maroon-red colour, the radiating hair on the forehead, and its compressed, semi-erect, crest. As Dr. Anderson points out, it is the only species with radiating hair on the forehead.

Habits.—Mr. Hose observes: "This handsome red Monkey is called by the Dyaks of Sarawak, 'Jellu merah,' and by the

Kayans 'Kaladi,' and is common everywhere. It is usually seen in large numbers, and some thirty or forty often pass one in the jungle, darting from branch to branch and making a tremendous noise. They will sometimes, when barked at by a dog, attack it and inflict a very bad bite. They ascend the mountains to the height of 3,000 feet; but at that height the colour of their hair becomes of a much deeper red. They are very destructive in the fruit gardens."

XXI. THE NATUNA LANGUR. SEMNOPITHECUS NATUNÆ.

Semnopithecus natunæ, Oldfield Thomas and Hartert, Nov. Zool. i., p. 652 (1894).

Characters.—Adult Male.—Size, proportions, and coloration showing a general resemblance to the *S. femoralis* group, the prevailing colours being black and white. While, however, the forehead, the fore-arms and hands, lower legs and feet, and tail (both above and below) are all deep glossy black, the back itself, with the occiput, nape, and shoulders, is brown. Thighs along a narrow strip on their outer aspect, ashy grey, darkening distally into the black of the lower legs, but their posterior aspect, continuous with their inner sides, is perfectly white, giving a very peculiar and characteristic appearance to the animal, and one which is quite unlike any species known to us, with the one exception that *M. siamensis* has whitish patches in somewhat the same position. Whole of under surface, with the sides of the neck, the hairs on the inside of the ears, and lines down the inner sides of the arms and legs, pure creamy white. Face thinly haired throughout, the hairs black, except those on the nose, where there is a whitish patch. Forehead with the hairs radiating outwards and backwards

from a single central point about half or three-quarters of an inch behind the eyebrows; posteriorly these hairs are much lengthened, as are those on the occiput, the latter being directed forwards and upwards in such a way that the black hairs of the forehead and the brown ones of the occiput meet to form a high crest on the crown. (*Oldfield Thomas and Hartert, l.c.*).

Young.—Messrs. Oldfield Thomas and Hartert describe a new-born specimen as follows: "Middle line of dorsal surface from crown to anus, and whole of tail, deep black, the breadth of the black on the back being about an inch and a half; the outer sides of the shoulders greyish, and also the backs of the hands and feet commencing to become black. The whole of the rest of the animal, including the forehead, arms, and legs, wholly pure white."

"Although among the many closely allied species of *Semnopithecus* it is difficult to be at all sure of their mutual affinities, it would seem that *S. natunæ* is most nearly related to *S. femoralis*, Horsf., and *S. siamensis*, M. and S. Both of these have a similar arrangement of the hairs on the crown and nape; and, on the other hand, the former possesses the wholly black hands, feet, and tail of *S. natunæ*, and to a certain extent the browner tint of the back, while, on the other, *S. siamensis* has its whitish under side and light thigh-patch, although united with a widely different coloration."

Habits.—Mr. Everett gives the following note: "Native name 'Kěkáh,' which is onomatopœic. These animals were common about the base of Mount Ranai, going in troops, and they commit great depredations on the native gardens. The irides are light cinnamon-brown; face livid black, the eyelids and muzzle,

white; feet and hands very dark brown; the ears blackish externally, the outer edge and interior dull white, marbled to some extent with livid blackish spots. In an immature individual, barely half-grown, the white of the eyelids, nose, and chin was tinged with dull pink; and at the exterior angle of each orbit was a bare spot of bluish-white, showing very distinctly, owing to its different tinge of colour, the skin of the face otherwise being livid black. With maturity these naked white spots at the angle of the orbits disappear. I kept this animal alive, intending to bring it home, but it succumbed to the severity of our return passage. It fed on the leaves of sweet potatoes and tapioca, and, although it had been recently captured, in a few days it was very gentle and timid. The breeding-season with these Monkeys is either very prolonged, or is not defined at all, for I obtained them in October, when the rains were beginning, in all stages, from a fœtus three inches long, to half-grown specimens."

XXII. PHAYRE'S LANGUR. SEMNOPITHECUS PHAYRII.

Semnopithecus obscurus (nec Reid), Blyth, J. A. S. Beng., xiii., p. 466 (1844).

Presbytis phayrei, Blyth, *op. cit.*, xvi., p. 733, pl. xxxvii., fig. 3 (1847); Wagner in Schreb. Säugeth. Suppl. v., p. 28 (1855); Tickell, J. A. S. Beng., xxviii., p. 428 (1859).

Semnopithecus argentatus, Blyth in Horsf. Cat. Mamm. E. I. Co. Mus., p. 7 (1851).

Presbytis cristatus, Raffl. apud Blyth, Mamm. Burma, p. 9 (nec Raffles).

Semnopithecus rubicundus, var. *C.*, Gray, Cat. Monkeys Brit. Mus., p. 17 (1870).

Semnopithecus phayrei, Anderson, Zool. Res. Exped. Yun-nan, p. 34 (1878); id., Cat. Mamm. As. Soc. Beng., p. 49; Schl., Mus. Pays-Bas, vii., p. 33 (1876); Blanford, Faun. Brit. Ind., Mamm., p. 39 (1891).

Characters.—Top of the head with a peaked longitudinal crest; hair of crown not radiating, but elongated and directed backward; whiskers long and outwardly directed, partly covering the ears; back, sides, fore-arm, hands and fore part of the feet blackish-brown, the middle of the back washed with yellowish; the chin, chest, and under surface of the body pale yellow; inside of the fore-arm and thighs brown; face livid, but the eyelids, lips, and a ring round the eyes, white, flushed with flesh-colour; length of body, $18\frac{1}{2}$ inches; tail, $21\frac{1}{2}$ inches.

Supra-orbital ridges of the skull not prominent, the occipital region vertical; facial region sloping downward.

The Babu Ram Bramha Lányal, writing in July, 1893, from the Zoological Gardens, Calcutta, to Dr. Sclater, says: "I am not aware whether closely allied species of *Semnopithecus* have ever inter-bred anywhere. They are rather exclusive in their ideas in respect to matrimonial relationship. Anyhow, such an event has just happened in this Garden. The Phayre's Langur, or as it is often called, Phayre's Leaf Monkey (*Semnopithecus phayrii*, Blyth) has given birth to a young one—a lovely little babe, of a delicate light orange colour. As there has been no other male in the same cage except the *S. cristatus*, there is no doubt of the young one being a hybrid between these two species. These Monkeys have been living together since 1880, and although they agreed very well, they were never observed to be over friendly. Even now the male does not appear to take any interest in the offspring."

Distribution.—Confined, as far as is known, to Aracan.

XXIII. RUTLEDGE'S LANGUR. SEMNOPITHECUS RUTLEDGII.

S. rutledgei, Anderson, Zool. Res. Exped. Yun-nan, p. 38 (1878).

Characters.—Head with a very well-defined erect median compressed crest; frontal hairs not projecting over the face. General colour black, the hairs tipped with lustrous grey on the head, crest, trunk, and limbs. Hands and feet black. Under surface paler and the hairs more tipped with grey; tail black above, yellow below, tipped with grey; whiskers long, backwardly and upwardly divided, and broadly tipped with yellowish-grey; beard greyish; face bluish-black. Length, 17 inches; tail, 24½ inches. (*Anderson.*)

Distribution and Habits.—Unknown.

XXIV. THE WHITE-FRONTED LANGUR. SEMNOPITHECUS FRONTATUS.

Semnopithecus frontatus, Müll., Tijds., Nat. Ges., v., p. 136, pls. i. and ii. (1838); Martin, Mammif. An., p. 475 (1841); Gray, Cat. Monkeys Brit. Mus., p. 16 (1870); Schl., Mus. Pays-Bas, vii., p. 34 (1876); Anderson, Zool. Res. Exped. Yun-nan, p. 39 (1878; with full synonymy); Hose, Mamm. Borneo, p. 12 (1893).

Characters.—General colour dark yellowish-brown, with a wash of red on the flanks in some specimens; the tail tufted. This species is at once recognised by the bald triangular wrinkled area between the eyebrows, of a milky-white colour, the rest of the face being deep black, except the flesh-coloured lips. It is also remarkable for the erect median crest over-arching the forehead; and by the long dependent black hairs on the cheeks from near the nose, increasing in length on

the hindmost part of the cheek, and reaching nearly to the shoulder.

The skull has a highly arched, narrow and retreating forehead; the facial portion is short.

Distribution.—South-east Borneo, where it is very rare.

XXV. THE DOUC LANGUR. *SEMNOPIITHECUS NEMÆUS*.

Simia nemæus, Linn., Mantiss. Plant., p. 521 (1771); Schreber, Säugeth., i., p. 110, pl. xxiv. (1775).

Cercopithecus nemæus, Erxl., Syst. Règn. An., p. 42 (1777); Kuhl, Beitr. Zool., p. 8 (1820).

Pygathrix nemæus, Geoffr., Ann. Mus., xix., p. 90 (1812).

Lasiopyga nemæus, Desm., Mamm., p. 54 (1820); Gray, Cat. Monkeys Brit. Mus., p. 13 (1870).

Semnopithecus nemæus, F. Cuv., Hist. Nat. Mamm., livr. 14 (May, 1825); Martin, Mammif. Anim., p. 459 (1841); Wagner in Schreb. Säugeth. Suppl. v., p. 35 (1855); Schl., Mus. Pays-Bas, vii., p. 64; Anderson, Zool. Res. Exped. Yun-nan, p. 40 (1878; with full synonymy).

Presbytis nemæus, Blyth, J. A. S. Beng., xliv., p. 11 (1875).

Characters.—Head without a crest. The naked face, the callosities, and the naked portions of the hands and feet yellow; head brown, with a narrow band of chestnut passing under the ears backwards, and a second but broader one, margined with black, across the chest, from shoulder to shoulder; whiskers long and directed backwards, pale grey—the hairs ringed with black and white; upper surface of the body and sides grey; base of the neck, chest, and shoulders as well as the upper part of the fore- and hind-limbs, with the hand and feet, black; the forehead paler; the fore-arm to the middle

of the hands, the rump, posterior region of the loins, and the tail pure white ; the lower portion of the hind-limbs to the middle of the feet reddish-brown. Tail shorter than the body. Length of body, 25 inches ; of tail, 20½ inches.

In the skull the forehead is low, the intra-orbital region broad and the facial portion broad at the base. (*Anderson.*) The thumb is well developed. The foetus is remarkable for its motley coloration, and shows also the white rump-spot.

Female.—Like the male. The young differ but little from the parents. Aged individuals retain the coloration of their maturity.

Distribution.—Northern Cochin-China ; Hainan. (*Meyer.*)

Habits.—The Douc goes about in large troops.

XXVI. THE BLACK-FOOTED LANGUR. SEMNOPITHECUS
NIGRIPES.

Semnopithecus nigripes, A. Milne-Edwards, Nouv. Arch. Mus. vi., p. 7 (1871) ; Schl., Mus. Pays-Bas, vii., p. 32 (1876) ; Anderson, Zool. Res. Exped. Yun-nan, p. 4 (1878).

Characters.—Similar to *S. nemæus*, but differing in having the posterior limbs black, and the fore-arms grizzled, instead of white. The whiskers are short and black, the body more slender, longer, and entirely white. The hind-limbs are also more elongated. Both sexes are alike ; and the young differ little from the adults.

The brain-case is depressed, the face short, and the inter-orbital swelling peculiar to so many of the crested *Semnopithecus*, is wanting.

Distribution.—Saigon in Cochin-China, and the forests bordering the Mekong river towards its mouth.

XXVII. THE BLACK-CRESTED LANGUR. SEMNOPITHECUS
MELANOLOPHUS.

Simia melalophus, Raffles, Tr. Linn. Soc., xiii., p. 244 (1821).

Semnopithecus melalophus (Le Cimepaye), F. Cuv., Hist. Nat., Mammif., livr. xxx. (July, 1821); Raffles, Tr. Linn. Soc., xxii., p. 245 (1822); Desmar., Dict. Sc. Nat., xlvi., p. 38 (1827); Martin, Mammif. Anim., p. 470 (1841); Geoffr., Cat. Méth. Primates, p. 16 (1851); Gray, Cat. Monkeys Brit. Mus., p. 16 (1870); Schl., Mus. Pays-Bas, vii., p. 43 (1876; in part); Anders., Zool. Res. Exped. Yun-nan, p. 34 (with full synonymy; 1878).

Semnopithecus flavimanus, Lesson, Cent. Zool., p. 109, pl. xl. (1830); Is. Geoffr., Cat. Méth. Primates, p. 16 (1851).

Semnopithecus sumatranus, var. *auratus* (nec Geoffr.), Müller and Schl. Verhandl., pl. x. *bis*, fig. 2 (1839-44).

Presbytes melanophus, Gray, Hand. List Mamm. Brit. Mus., p. 2 (1843).

Presbytes flavimana, Gray, *t.c.*, p. 2 (1843).

Semnopithecus nobilis, Gervais, Hist. Nat., Mammif., p. 63 (1854); Gray, Cat. Monkeys Brit. Mus., p. 17 (1870).

Semnopithecus ferrugineus, Schl., Mus. Pays-Bas, vii., p. 42 (1876).

Characters.—Head crested; the crest dark-brown, tipped with dusky; forehead pale yellow; a line from the outer corner of the eye to the ear, dark brown; back, sides, and shoulders reddish, washed with pale brown; the rest of the fore-limbs, the whole of the hind-limbs, and the tail, orange-red. Length of body, 18 inches; of tail, 32 inches.

The golden variety (*S. auritus*) from Sumatra, is generally yellowish-red throughout.

The skulls present a good deal of variation in the form of the internal orbital angles of the frontal, and in the occipital, bones.

Distribution.—Sumatra : Padang, Indrapoera, Bencoolen, Palembang, and the Lampongs.

Habits.—The “Simpai,” as the Malays call this Langur, is very abundant in Sumatra, where the present writer has obtained it both in the north of the Palembang Presidency and in the south of the Lampongs. It is undoubtedly in part to this species that Dr. Wallace refers in his “Malay Archipelago,” when, at Lobo Raman, he says that they frequented the trees overhanging the guard-house in which he was staying. “Two species of *Semnopithecus* were most plentiful—Monkeys of a slender form and long tails. Not being much shot at, they are rather bold, and remain quite unconcerned when natives alone are present, but when I came out to look at them, they would stare for a minute or two and then make off. They take tremendous leaps from the branches of one tree to those of another a little lower, and it is very amusing when one strong leader takes a bold jump, to see the others following with more or less trepidation ; and it often happens that one or two of the last seem quite unable to make up their minds to leap till the rest disappear, when, as if in desperation at being left alone, they throw themselves frantically into the air, and often go crashing through the slender branches and fall to the ground.”

XXVIII. THE MITRED LANGUR. *SEMNOPITHECUS MITRATUS*.

Presbytis mitrata, Escholtz, in Kotzeb. Reis., p. 196, *cum tab.*
(1821).

- Semnopithecus comatus*, Desmar., Mamm. Suppl., p. 533 (1822);
 Martin, Mammif. Anim., p. 468 (1841); Wagner in
 Schreber Säugeth. Suppl. v., p. 24 (1855).
Semnopithecus fulvo-griseus, Desmoul., Dict. Hist. Nat., vii., p.
 570 (1825).
Semnopithecus fascicularis, Owen, P. Z. S., 1833, p. 75.
Semnopithecus mitratus, Schl., Essai Phys. Serp., p. 237
 (1837); Geoffr., Cat. Méth. Primates, p. 16 (1851); Gray,
 Cat. Monkeys Brit. Mus., p. 16 (1870); Schl., Mus. Pays-
 Bas, vii., p. 37 (1876); Anders., Zool. Res. Exped. Yun-
 nan, p. 36, (1878; with full synonymy).
Semnopithecus siamensis, Müll. u. Schl., Verh., p. 60 (1841);
 Anders., *t.c.*, p. 37 (with synonymy).
Semnopithecus albo-cinereus, Blyth, J. A. S. Beng., xii., p. 175
 (1843); Schl., Mus. Pays-Bas, vii., p. 38 (1876).
Presbytes argentatus, Blyth; Horsf. Cat. Mamm. E. I. Co.
 Mus., p. 7 (1851).
Semnopithecus nigrimanus et *S. cinereus*, Mivart, P. Z. S., 1864,
 pp. 625, 626.
Presbytes cristatus (nec Raffles) et *P. melanolophus*, Blyth,
 Mamm. Burma, p. 9 (1875).

Characters.—Head with a compressed blackish crest; hairs radiating from the forehead over the eyes; crown above grey, mingled with black, becoming black on the front of the crest and nape of the neck; flanks, under surface of the body and tail, as well as the inner side of the limbs, dirty white; hands and feet whitish, mixed with black or reddish hairs; upper surface of the tail dark grey, the tip paler and tufted; ears and face deep black; legs flesh-coloured; chin and throat white. Length of body, 20½ inches; of tail, 28½ inches.

The hind-most lower molar has generally only four tubercles.

The variety of this species inhabiting Siam has a fleshy-white area round the eyes and mouth.

Distribution.—Siam ; the Malay Peninsula ; and Sumatra.

XXIX. THE MOUPIN LANGUR. SEMNOPITHECUS
ROXELLANÆ.

Semnopithecus roxellana, A. Milne-Edwards, C. R., lxx., p. 341 (1870) ; Schl., Mus. Pays-Bas, vii., p. 65 (1876).

Rhinopithecus roxellana, id., Rech., Mammif., p. 233, pls. xxxvi., xxxvii. (1868-1874) ; Blyth, Mamm. Burm., p. 11 (1875).

Semnopithecus (Nasalis) roxellana, Anders., Zool. Res. Exped. Yun-nan, p. 43 (1878).

Characters.—Face naked, nose depressed in the middle, the tip elevated and terminating in a singular leaf-like point ; sides of the face and brows clothed with a thick ruff, which extends in a line across the face towards the nose ; face green ; the frontal region, sides of the face, auricular region, sides of the neck and shoulder, chin, chest, inner side of the fore-limbs, and upper aspect of the feet, yellow ; top of head greyish-black washed with rufous ; from the nape (with the outer aspect of the fore-limb) to the lower back silvery-grey, darker towards the neck, brightening towards the tail and front of the thighs, where it is washed with bright yellowish-grey ; callosities and outer aspect of the thighs, bright yellow ; under surface of the body grey washed with yellow ; tail grey at the base, tufted at the tip and yellow ; thumb very short. Length of body, 26 inches ; of tail, 21 inches.

Female.—Similar to the male, but duller.

Young.—Also paler, with more yellowish-grey round the ears, but the top of the head not black. (*Anderson.*)

Distribution.—The present species inhabits the forests of the high mountains which clothe the western region of the Principality of Moupin, in North-western China, to Kokonoor and Kansu Kinsu.

Habits.—This very remarkable animal, whose discovery we owe to the researches of that renowned traveller, the Abbé David, lives in large troops on the highest trees of the forest, in regions where the snow lies throughout the greater part of the year. It feeds on fruits, leaves, and the young shoots of the forest-trees, and of the wild bamboo. It has been placed by some systematists in a separate genus, *Rhinopithecus*, along with *Nasalis larvatus*, from Borneo, on account of the extraordinary form of its nose and of the length of the arm being greater than the fore-arm; but in its structural characters it is very closely related to *Semnopithecus*.

THE NOSED MONKEYS. GENUS NASALIS.

Nasalis, Geoffr., Ann. Mus., xix., p. 90 (1812).

This genus contains only one species,

THE PROBOSCIS MONKEY. NASALIS LARVATUS.

(Plate XXXVII.)

Cercopithecus larvatus, Wurm., Verhand. Bat. Genootsch., iii., p. 145 (1781); Kuhl, Beitr. Zool., p. 12 (1820).

Simia nasica, F. Cuv., Dict. Sc. Nat., xx., p. 32 (1821).

Nasalis larvatus, Geoffr., Ann. Mus., xix., p. 90 (1812); Lesson, Spec. des Mamm., p. 66 (1840); Jacq. et Puch., Voy. au Pole Sud, Zool. iii., p. 17, pls. 2, 2A, 2B (1853); Lenz, Zool. Gart., xxxii., p. 216; Gray, Cat. Monkeys Brit. Mus., p. 13 (1870); Hose, Mamm. Borneo, p. 8 (1893).



THE PROBOSCIS MONKEY.

Cercopithecus nasicus, Desmar. et Virey, Nouv. Dict. d'Hist. Nat., xv., p. 574 (1817); Wagner in Schreb. Säugeth. Suppl. i., p. 102, pl. x.B (1840).

Semnopithecus nasicus, Desmoul., Dict. Class. d'Hist. Nat., vii., p. 570 (1825); Schinz, Syn. Mamm., i., p. 43 (1844); Wagner in Schreb. Säugeth. Suppl. v., p. 35 (1855).

Nasalis recurvus, Vigors et Horsf., Zool. Journ., iv., p. 109 (1828-9; head of young figured); Martin, P. Z. S., 1837, p. 71.

Semnopithecus larvatus, Fischer, Syn. Mamm., p. 16 (1829); Martin, Mammif. An., p. 453, figs. 279, 280-2 (1841).

Rhynochopithecus larvatus, Dahlb., Stud. Zool., p. 93, pl. iv. (1856).

Semnopithecus (Nasalis) larvatus, Anderson, Zool. Res. Exped. Yun-nan, p. 42 (1878; with full synonymy).

Characters.—Face cinnamon-brown; ears blackish, as also the palms and soles; upper surface of the head, neck, back and sides yellowish-brown, conspicuously marked with reddish-brown and white; rump, tail and limbs yellowish-grey; tails of old specimens quite white; sides of face yellow, and a stripe of the same colour on the shoulders. Under surface yellowish-white.

Hair on the head, which is parted down the centre, on the sides of the face, neck and shoulders, long; the chin full-bearded and the tail tufted; ears small; the nose the most conspicuous feature of the face, produced into a proboscis capable of dilatation, with large nostrils opening downwards, separated from each other by a septum of thin cartilage extending to the extremity. In old males the point of the nose reaches quite below the lowest part of the chin; it is pear-shaped, and furrowed down the middle, giving it the appear-

ance of being double tipped ; it is widest in the middle of the free portion. The proboscis is fully developed only at an advanced age in both sexes, being much shorter in the young, and turned upwards. Vigors and Horsfield described their *N. recurvus* from a specimen which appeared to them to be perfectly adult. The forehead is low ; the eyes are wide apart, and the neck is short and much dilated from the presence of a very large laryngeal sac. Length of the body, 29½ inches ; of the tail, 26 inches.

Female.—Similar to the male, but it is smaller, and wants the greyish rump markings ; while the proboscis is somewhat less developed.

Young.—Have the face blackish and the cheeks wrinkled ; the back of the head, down to the shoulders and upper part of the fore-limb is dark reddish-brown. "Through a series of changes during which the red-brown of the upper parts first increases in strength, and the grey-brown of the hips and upper side of the tail change to yellowish-white, the adult pelage is reached." (*Anderson.*)

This extraordinary animal presents all the structural characters of the genus *Semnopithecus* ; but the lower border of the nasal bones, forming the entrance to the nasal chamber, extends considerably below the lower border of the eye-sockets. The facial portion of the skull does not much exceed the brain-case.

The Proboscis Monkey has the sacculated stomach already described in the Langurs.

Distribution.—The Proboscis Monkey is confined to the island of Borneo. Mr. Hornaday found it along the west bank of the Sarawak river, both near the sea and two miles below the

town. It occurs also in some abundance on the Batang Lupar river. Mr. Hose says that it is chiefly found near the mouths of the rivers in Southern Sarawak.

Habits.—The Proboscis Monkey, variously called Blanda (or White Man) and “Rasong” by the natives, is an arboreal creature living in small troops. “As usual,” writes Mr. Hornaday, “they were over water, and, being swift climbers and quite shy, were hard to kill. I saw altogether, during my ramblings in the forests of Borneo, perhaps a hundred and fifty Proboscis Monkeys, and, without a single exception, all were over water, either river, lake, or submerged forest. As long as they are in sight they are very conspicuous objects, choosing the most commanding positions in open tree-tops. Once I saw thirteen in one tree, sitting lazily on the branches, as is their habit, sunning themselves and enjoying the scenery. It was the finest sight I ever saw in which Monkeys played a part. The cry of the ‘Blanda,’ is peculiar and unmistakable. Written phonetically it would be ‘Honk,’ and occasionally ‘Kec-honk,’ long drawn and deeply resonant, quite like the tone of a bass viol. . . . The Proboscis Monkey is a large animal of striking appearance both in form and colour. Taken altogether, *Nasalis larvatus* is, to the hunter-naturalist, a very striking object of pursuit, and were he not partially eclipsed by the Orang he would be the most famous Quadrumane in the East Indies.”

THE MAN-LIKE APES. FAMILY SIMIIDÆ.

In this family are included the Gibbons, the Orangs, the Gorillas, and the Chimpanzees, the most highly organised and the nearest to Man in structure of all the *Anthropoidea*. To

these groups the term "Ape," has been by many writers chiefly restricted, the remaining families of the Old World, and all of the Western Hemisphere, being designated "Monkeys" as a convenient method of nomenclature. The outward resemblance of the *Simiidae* to Man has made the various members of the family objects of the greatest interest, not alone to the naturalist, but to every intelligent person; and has naturally suggested a constant inter-comparison between the characters of both.

They are all essentially arboreal climbing animals, yet when they come to the ground they progress in a semi-erect position of their own accord. Their front-limbs are always so much longer than their hind-limbs, that when walking on a level surface their fingers reach the ground, without stooping lower than their semi-erect attitude. Their front-limbs vary in length in the different genera; so does the thumb; but their great-toe is always smaller in proportion to the foot than it is in Man, and, unlike his, is opposable to the other toes. As they belong to the Catarrhine group, their nose has a narrow partition between the nostrils, which are directed downwards. In all, an external tail, cheek-pouches, and (except among the Gibbons) ischial callosities are wanting. All are covered with hair, some more thickly than others, but no Ape has on its head the long abundant locks which Man possesses.

The form of the skull varies very greatly in the *Simiidae*. It is, however, always longer than broad. In its frontal region it is never so rounded and elevated as in Man. The roof of the eye-sockets projects into the fore part of the brain-cavity, and considerably reduces its capacity. The pre-maxillary bones (carrying the incisor teeth) are relatively more distinct and much larger than in Man, "the sutures

separating them from the maxillary bones remaining visible after the adult dentition has been obtained." (*Mivart*.)* The *Simiidae* have a bony meatus or canal to the ear. The back part of the head, which among the Guenons is flat, is convex among the *Simiidae*. The palate is long and narrow, and the margins of the jaws nearly parallel. The lower jaw is always in one piece, the two halves being firmly ossified in the middle. The dental formula of the Man-like Apes is $I\frac{2}{2}$, $C\frac{1}{1}$, $P\frac{2}{2}$, $M\frac{3}{3}$ (*i.e.*, 32 teeth in all); their inner upper incisors are larger, and the lower are smaller than the outer pair; the canines are large, and between them and the neighbouring incisor above there is a vacuity (or diastema), and, below, between them and the nearest pre-molar. The upper pre-molars have three roots, and the lower, two; the upper molars have four tubercles, their crowns being relatively wide; the lower molars have five tubercles, but the posterior has no hind talon.

The opening for the passage of the spinal cord is situated towards the posterior portion of the base of the cranium, and is thus further from the centre than in Man.

Except among the Gibbons, the vertebral column shows in the sacral region indications of that curve—or concavity in the back between the two convexities of the neck and loins—which is one of the distinctive characters of the human skeleton. The processes for the interlocking of the vertebræ, which are large in the lower Anthropoids, are much reduced in the Man-like Apes, and become inconspicuous in Man.

The breast-bone is flat, and resembles that of Man, and, in all, except the Orang, is composed of two bones. The arm-

* Specimens of *Anthropopithecus niger* and *Gorilla gorilla*, in the Derby Museum, Liverpool, in which the permanent teeth have not yet developed, have the premaxillary suture quite obliterated.

bone is often shorter than the fore-arm. The *radius* and *ulna* can be completely rotated. The articulating surface of the *trapezium*, the wrist-bone (*carpus*), to which the thumb is attached, has a rounded face like that of the *ento-cuneiform* bone in the ankle (*tarsus*), a form which, as already pointed out (Vol. I., p. 11), was in the Lemuroids correlated with an opposable great-toe, so here it is correlated with a true opposable thumb. In the Monkeys and Lemuroids this bone is not generally rounded, and they have not the thumb opposable in the strict sense that it is among the higher Apes.

The thigh-bone (*femur*) is shorter than the arm-bone (*humerus*); and the foot is very long; yet the absolute length of the *tarsus* is never so great as in Man; it is the rest of the foot which is so much longer relatively in Apes. The *ento-cuneiform*, or articulating bone of the ankle for the great-toe, has a sub-cylindrical surface, which gives a great range of motion to that digit, towards and from the plane of the foot.

The brain of the Apes closely resembles in general form and structure that of Man; but the cerebral hemispheres differ in being much elongated and depressed, and the cranial capacity of the skull, which is never less than 55 cubic inches in any normal human subject, is in the Chimpanzee $27\frac{1}{2}$ cubic inches; in the Gorilla 35 inches; in the Orang 26 inches; and in the Gibbons very much less. The cerebrum has its surface richly convoluted; and its posterior lobes always entirely over-arching the cerebellum, except in the Siamang (*Hylobates syndactylus*).

"As to the convolutions, the brains of the Apes exhibit every stage of progress, from the almost smooth brain of the Marmoset, to the Orang and the Chimpanzee, which fall but little below Man. And it is most remarkable that as soon as

all the principal sulci [or grooves] appear, the pattern according to which they are arranged is identical with that of the corresponding sulci of Man. The surface of the brain of a Monkey exhibits a sort of skeleton map of Man's, and in the Man-like Apes the details become more and more filled in, until it is only in minor characters, such as the greater excavation of the anterior lobes, the constant presence of fissures usually absent in Man, and the different disposition and proportions of some convolutions, that the Chimpanzee's or the Orang's brain can be structurally distinguished from Man's. . . . And the difference between the brains of the Chimpanzee and of Man is almost insignificant when compared with that between the Chimpanzee's brain and that of a Lemur." (*Huxley*.)

The Anthropoid Apes have no cheek-pouches. The larynx has large dilatations of the shallow depressions—called ventricles—of the mucous membrane on each side of its inner surface—which may extend down as far as the arm-pits, and be connected with powerful voice possessed in most of the species. The stomach is simple, like that of Man, and not sacculated, as in the last family (the *Cercopithecidae*).

The uterus and other structures connected with the reproductive system resemble those in the human subject. The length of gestation varies probably in the different genera, and is unknown in many of the species. The period for which the young are suckled by the mother lasts about six months. "The proportions of the limbs to one another and to the body do not sensibly change after birth; but the body, limbs, and jaws enlarge to a much greater extent than the brain-case." (*Huxley*.) Observations are still required, in regard to most of the species, as to the age at which they arrive at maturity, and are able to reproduce.

The *Simiidæ*—the most intelligent of the animal kingdom—are all diurnal animals, and essentially arboreal. Many of the members of the family have, when walking, a tendency to tread on the outer edge of the foot, turning, therefore, the toe inward on account of the free motion which is possible between the various bones of its ankle, whereas, in the human foot, these bones are more solidly bound together. When climbing, the power of turning in the sole is, as is evident, of the greatest advantage to the Ape. Their food is chiefly vegetable; a few species exhibit slight carnivorous tendencies.

“Of the various genera of the *Simiidæ*, the Gibbons are most remote from Man. The Orangs come nearest in the number of the ribs, the form of the cerebral hemispheres, and certain other characters of the brain and skull; but they differ from him much more widely in other characters, especially in the limbs, than the Gorilla and the Chimpanzee do. Of the Chimpanzees the Gorilla is more Man-like in the proportions of the leg to the body, and of the foot to the hand; and likewise in the size of the heel, the curvature of the spine, and the absolute capacity of the cranium. The true Chimpanzees approach Man most closely in the skull, dentition, and proportionate length of the arms.” (*Huxley*.)

The *Simiidæ* are confined to the Ethiopian and Indian Regions. The Gorillas and Chimpanzees live exclusively in the Tropical Regions of Western and Central Africa; the Gibbons range into all the four provinces of the Indian Region; while the Orangs are confined to two islands of the Indo-Malayan Sub-region.

THE GIBBONS. GENUS HYLOBATES.

Hylobates, Illiger, Prodr. Syst. Mamm., p. 67 (1811).

The group of Tree-walkers, as the term *Hylobates* signifies,

embraces the smallest-sized, the slenderest-bodied, the longest-limbed, and the most perfectly arboreal of all the Man-like Apes. All are covered with thick woolly hair, which, on the arms and fore-arms, converges (except in *H. agilis*) towards the elbow.

Their head is small and round, and the face compressed. Except the Orangs, the Gibbons have the longest arms of all the Apes, so long that when they stand erect the points of their fingers can touch the ground. Compared with the spinal column, their arms are as 19 to 11, while the legs are one-third longer than it. The fore-arm is much longer than the arm itself; the hand is longer than the foot, and the thumb is very long in proportion to the hand. The knee is free from the side of the body, and the great-toe is well developed and nearly one-half the length of the foot. The nails of both the thumb and the great-toe are flat. Callosities, which are wanting in all the other genera, are present in *Hylobates*, but are very small.

In the skull the occiput is convex; the orbits are very large and deep, and the supra-orbital ridges prominent. The canine teeth are much larger than the others, and equally large in both sexes. They are generally the last of the permanent teeth to come in, but in the Gibbons they generally precede, or are developed along with, the last molar.

The vertebral column is nearly straight, presenting but little of the spinal curvature seen in Man; it has also in the dorso-lumbar region one vertebra more than in the human skeleton. The articulating head of the arm-bone (*humerus*) loses the direction it had among the Monkeys, and looks upward and forward as in Man. The wrist (*carpus*) has nine bones, as in the lower *Anthropoidea*. The skeleton of the hand is more

than half the length of the spine, and the foot is slightly under half its length. The Gibbons have two pairs of ribs more than Man. The ends of the ischial bones are much everted to support the callosities.

With regard to the brain, this genus is remarkable for the great reduction of the occipital lobes of the cerebrum.

The tongue is very similar to that in Man, but it is furnished with a sub-lingual process like that already described among some of the Lemuroids. The Gibbons (except the Siamang) have no laryngeal sacs. The stomach closely resembles the human organ.

The Gibbons are very delicate, and rarely live long in confinement, even in their own country. They are in general highly intelligent, very gentle, and become most affectionate and engaging animals if kindly treated. They are, however, occasionally irascible and ill-tempered, especially when adult.

Their feats of climbing and leaping are almost proverbial. It would be impossible to excel them as acrobats. When walking on the ground they assume the erect posture, putting the soles of their feet to the ground, separating the thumb and the great-toe widely from the neighbouring digits.

"They walk erect, with a waddling or unsteady gait, but at a quick pace; the equilibrium of the body requiring to be kept up, either by touching the ground with the knuckles, first on one side then on the other, or by uplifting the arm so as to poise it. As with the Chimpanzee, the whole of the narrow, long sole of the foot is placed upon the ground at once and raised at once, without any elasticity of step." (*Martin.*)

Their voice is very powerful and can be heard at a great distance, especially when they are howling in chorus. The

Wau-Wau and the Siamang, the one without, and the other with, a laryngeal sac, are equally vigorous in this respect.

The female produces but a single young one at a birth, of which she takes the greatest care. She carries it about, clinging to the under side of her body, for many months. It is said that she even takes it to the waterside from time to time, and with much solicitude, and in spite of its cries and resistance, washes its face.

The Gibbons frequent the great upland forests; but the Siamang (*H. syndactylus*) may be met with at quite low levels and close to the coast. Their food consists of fruit, leaves, and insects, eggs of birds, and apparently birds and lizards, and especially spiders. They drink either by putting the mouth down to the water, or by dipping in their hands and thus carrying it to their mouths.

The Gibbons are confined to two Sub regions of the Indian Region. With the exception of the Siamang, all the so-called species of *Hylobates* are so closely allied to each other, and differ by characters of such slight importance, that they seem to be hardly worthy of specific distinction. (*Thomas.*)

I. THE AGILE GIBBON. *HYLOBATES AGILIS*.

Pithecus lar (nec L.), Geoffr., Ann. Mus., xix., p. 88 (1812).

Hylobates agilis, F. Cuv., Hist. Nat. des Mammif., Sept. 1821, pls. v., vi.; Müller, Tijdschr. Nat. Gesch., ii., p. 326 (1835); Martin, Mammif. Anim., p. 416 (1841); Fry, P. Z. S., 1846, p. 11; Gray, Cat. Monkeys Brit. Mus., p. 12 (1870); Schl., Mus. Pays-Bas, vii., p. 17 (1876); Anderson, Zool. Res. Exped. Yun-nan, p. 9 (1878; with full synonymy).

Pithecus agilis, Desmar., Mamm., p. 532 (1820).

- Simia lar* (nec L.), Raffl., Tr. Linn. Soc., xiii., p. 242 (1822).
Hylobates lar (nec L.), F. Cuv., Hist. Nat., Mamm., pls. 7, 8
(1824); Blyth, J. A. S. Beng., xliv., ex. no., p. 2 (1875).
Hylobates variegatus, Temm., Monogr. Mamm., i., p. xiii. (1827);
Wagner in Schreb. Säugeth. Suppl. v., p. 16 (1855);
H. O. Forbes, Nat. Wand. East. Arch., p. 156 (1885).
Hylobates rafflesii, Is. Geoffr., Cat. Méth. Primates, p. 8
(1851); Gray, Cat. Monkeys Brit. Mus., p. 11 (1870).
Hylobates pileatus, Gray, P. Z. S., 1861, p. 136, pl. xxi.; id.,
Cat. Monkeys Brit. Mus., p. 10 (1871); Anderson, Zool.
Res. Exped. Yun-nan, p. 6 (1878).

Characters.—Face black; colour entirely black, but becoming brown on the back and sides, and with a white superciliary band, and sometimes ashy-grey cheeks.

This is the typical form of the species in Mid-Sumatra, where the present writer had the opportunity of examining it alive. It was with difficulty distinguished from *H. syndactylus*, except from its size and the presence of the white superciliary band.

Other specimens (but none of them met with to the south of the Moesi river by the present writer) have been described, with the occiput, the back from immediately behind the shoulders, the flanks, the hips, and the outer surfaces of the fore- and hind-limbs, pale yellow. The shoulders, chest, and belly, and the inside of the limbs and feet dark brown; eyebrows and whiskers pale grey. (*Anderson.*)

The variety described as *H. pileatus* is distinguished by a black cap-like patch on the top of the head; the chest, throat, and belly black; the back of the head, the upper surface of the body, the limbs and area round the black cap grey. This variety may also be entirely white, except for the coronal cap

and chest being black, and the back brown; or the pervading colour may be brown, the sides of the face and the under surface black, and the whiskers white. The index and middle fingers are occasionally webbed together.

All the hairs on the arm and fore-arm converge towards the wrist.

Distribution.—This species is confined to Sumatra and to Siam. In the former country it is known by the name of “Ongka” by the Malays, who, with the keen powers of observation they possess in regard to all natural objects, recognise two varieties, the white or yellow variety—“Ongka putih,” and the black one—“Ongka hitam” (*H. rafflesii*). The capped variety (*H. pileatus*) with its variously coloured forms inhabits Siam.

Habits.—The habits of the “Ongka” are very similar to those of the Wau-wau, or the Siamang (*H. syndactylus*). The natives, however, aver that it is much more silent, rarely howling as either of these other two species do. They are also seen generally in quite small troops, and often in pairs only.

“It is almost impossible,” writes Mr. Martin of a specimen that lived formerly in the Zoological Gardens, “to convey in words an idea of the quickness and graceful address of her movements: they may, indeed, be termed ærial, as she seems merely to touch, in her progress, the branches among which she exhibits her evolutions. In these feats her hands and arms are the sole organs of locomotion; her body hanging as if suspended by a rope, sustained by one hand (the right, for example), she launches herself by an energetic movement to a distant branch, which she catches with the left hand. But her hold is less than momentary; the impulse for the next

launch is acquired ; the branch then aimed at is attained by the right hand again, and quitted instantaneously, and so on, in alternate succession. In this manner spaces of twelve and eighteen feet are cleared with the greatest ease, and uninterruptedly for hours together, without the slightest appearance of fatigue being manifested ; and it is evident that if more space could be allowed, distances very greatly exceeding eighteen feet would be as easily cleared. . . . Sometimes on seizing a branch in her progress, she will throw herself, by one arm only, completely round it, making a revolution with such rapidity as almost to deceive the eye, and continue her progress with undiminished velocity. It is singular to observe how suddenly this Gibbon can stop, when the impetus given by the rapidity and distance of her swinging leaps would seem to require a gradual abatement of her movements. In the very midst of her flight a branch is seized, the body raised, and she is seen, as if by magic, quietly seated on it, grasping it with her feet. . . . A live bird was let loose in her apartment ; she marked its flight, made a long swing to a distant branch, caught the bird with one hand in her passage, and attained the branch with her other hand ; her aim, both at the bird and the branch, being as successful as if one object only had engaged her attention. It may be added, that she instantly bit off the head of the bird, picked its feathers, and then threw it down, without attempting to eat it."

II. THE WAU-WAU GIBBON. HYLOBATES LEUCISCUS.

A. *Javan Race (H. leuciscus).*

Simia leucisca, Schreber, Säugeth. i., pl. iii. b. (1775).

Pithecus leuciscus, Geoffr., Ann. Mus., xix., p. 89 (1812).

Hylobates leuciscus, Kuhl, Beitr. Zool., p. 6 (1820); Desmar. Mamm., p. 51 (1820); Martin, Mammif. An., p. 416 (1841); Is. Geoffr., Cat. Méth. Primates, p. 7 (1851); Wagner, Schreb., Säugeth. Suppl. v., p. 16 (1855); Gray, Cat. Monkeys Brit. Mus., p. 15 (1870); H. O. Forbes, Nat. Wand. East. Arch., p. 70 (1875); Schl., Mus. Pays-Bas, vii., p. 19 (1876); Anderson, Zool. Res. Exped. Yun-nan, p. 7 (1878; with full synonymy).

B. *Bornean Race* (*H. concolor*).

Simia concolor, Harlan, Journ. Acad. Nat. Sc. Phil., v., p. 229 pl. ii. (1827).

Hylobates harlani, Less., Bull. des Sc. Nat., xiii., p. 111 (1827).

Hylobates concolor, Schl., Essai Phys. Serp., p. 237 (1837); S. Müller, Verhand. Gesch., p. 48 (1841); Blyth, J. A. S. Beng., x., p. 838 (1841); Martin, Mammif. An., p. 417 (1841); Fry, P. Z. S., 1846, p. 15; Wagner in Schreb. Säugeth. Suppl. v., p. 17 (1855; in part); Schleg., Mus. Pays-Bas, vii., p. 20 (1876); Anderson, Zool. Res. Exped. Yun-nan, p. 11 (1878).

Hylobates mülleri, Martin, Mammif. Anim., p. 444 (1841); Is. Geoffr., Cat. Méth. Primates, p. 7 (1851); Schlegel, Mus. Pays-Bas, vii., p. 21 (1876); Anderson, Zool. Res. Exped. Yun-nan, p. 8 (1878; with full synonymy); Hose, Mammals of Borneo, p. 6 (1893).

Hylobates funereus, Is. Geoffr., C. R., xxxi., p. 874 (Dec., 1850); Wagner in Schreb. Säugeth. Suppl. v., p. 18 (1855).

? *Hylobates fuscus*, Winslow Lewis, Bost. Journ. N. Hist., i., pt. i., p. 32, pls. i., ii. (1834).

Characters.—Fur thick, long and woolly. General colour ashy-grey, paler on the lower back and rump; hair round

the face grey ; superciliary streak white ; top of the head black ; fingers and toes black.

This species has been found to possess occasionally a supernumerary finger on each hand.

Distribution.—The Indo-Malayan Sub-region. Java, Borneo, and the Sulu Archipelago between Borneo and the Philippines.

Habits.—The Wau-Wau—the Malay name for this Gibbon—is one of the first of the Quadrumana that makes its presence known to the traveller in Java, when he reaches its upland forest regions. In the evening, just about sundown, and more especially in the early morning commencing before sunrise and finally ceasing when the sun is above the tops of the trees, he will be surprised by a sudden outbreak of what appears to be now the loud plaintive wailings of a crowd of women, now the united howling of a band of castigated children. The present writer's first acquaintance with this charming genus of Monkeys was made among the Kosala hills in Western Java, and it will ever remain with him as one of many most pleasant recollections of a long tropical sojourn. Their “woo-oo-ut—woo-ut—woo-oo-ut—wut-wut-wut—wüt-wüt-wüt,” always more dolorous on a dull heavy morning previous to rain, is just such a cry as one might expect from the sorrowful countenance so characteristic of the species of *Hylobates*. The Wau-Wau has a wonderfully human look in its eyes ; and it was with great distress that the writer witnessed the death of the only one he ever shot. Falling on its back with a thud on the ground, it raised itself on its elbows, passed its long taper fingers over the wound, gave a woeful look at them and at his slayer, then fell back at full length—dead—“saperti orang” (just like a man), as his Malay companion remarked. He kept in captivity for a short time a specimen which was brought to him by a native, and it

became one of the most gentle and engaging creatures possible ; but when the calling of its free mates reached its prison house, it used most pathetically to place its ear close to the bars of its cage and listen with such intense and eager wistfulness that it was impossible to retain it in durance any longer. It was accordingly set free on the margin of its old forest home. Strange to say, its former companions, perceiving perhaps the odour of captivity about it, seemed to distrust its respectability, and refused to allow it to mingle with them. Amid the free woods we may hope that this taint was soon lost and that it recovered all its pristine happiness.

In general habits it in no way differs from the other species of *Hylobates* already described.

In regard to the Bornean specimens of this species, Dr. Anderson makes the following observations : " This species varies from grey to dark yellowish-brown, but the grey tint in certain lights appears pure ashy, and in others of a brownish tint. In some the chest and abdomen are frequently yellow, and this seems to be the character of individuals met with on the west coast of Borneo, while those inhabiting the meridional parts of the island have the hands and fore part of the body of a black-brown or reddish-brown. In both of these varieties there is a yellowish-white superciliary streak. The last of them leads into the varieties of *Hylobates* from the neighbouring islands of Sulu, to the north-east of Borneo, in which the upper parts of the body are either grey or brownish, the lower part of the back and the loins being a little more clear than the rest." The outer surface of the limbs, the back part of the head, the supercilium, and the sides of the face are more or less pure ashy-grey. " Specimens of this Gibbon obtained by me," writes Mr. Charles Hose, who is well known for his Bornean researches,

“at Claudetown, and now in the British Museum, show that the colouring in different parts of the body must be considered of little importance, as I obtained eleven specimens, five of which were in the same troop and the other six from the same locality, varying in colour as much as it is possible for them to do ; some had yellowish backs and black chests, others black backs with yellowish chests, and some were nearly black all over ; whilst others were almost a complete silver-grey. I, therefore, come to the conclusion that *H. muelleri* and *H. leuciscus* cannot be separated. The peculiar bubbling noise they make is similar. I think it very unlikely that two distinct species should be so constantly found together as they are in Sarawak.

“The natives call the silver-grey variety ‘Emplian’ or ‘Wa-Wa,’ and the dark one, ‘Emplian arang’ (coal), because of its colour.”

III. THE WHITE-CHEEKED GIBBON. *HYLOBATES LEUCOGENYS*.

Hylobates leucogenys, Ogilby, P. Z. S., 1840, p. 20 ; Blyth, J. A. S. Beng., x., p. 838 (1841) ; Martin, Mammif. Anim., p. 445, *cum fig.* (1841) ; Is. Geoffr., C. R., xv., p. 717 (1842) ; id., Arch. Mus., ii., p. 535 (1843) ; Gray, Cat. Monkeys Brit. Mus., p. 11 (1870) ; Schl., Mus. Pays-Bas, vii., p. 13 (1876) ; Schl., P. Z. S., 1877, p. 679, pl. lxx. ; Anderson, Zool. Res. Exped. Yun-nan, p. 6 (1878 ; with synonymy).

Characters.—Fur glossy, thick, and woolly ; the hair of the upper and back part of the head standing vertically erect ; the face, chin, and ears black ; round the face from the level of the eyes and meeting below the chin runs a white border, forming

whiskers and beard; elsewhere the colour is entirely black. Length of the body, 26 inches.

Distribution.—Siam.

Habits.—This rare species is very active and gentle in confinement. It will hang suspended, as Martin observed in the first specimen brought to Europe, from a branch for the whole day, except when asleep or reposing.

The type specimen was described in 1840,—its skin being preserved in the British Museum; but it was not till 1877—after a lapse of thirty-seven years—that a second specimen was brought to this country. It was sent to the Zoological Gardens by Mr. W. H. Newman, H.B.M. Consul at Bankok.

IV. THE WHITE-HANDED GIBBON. *HYLOBATES* *LAR*.

Homo lar, Linn., Mantiss. Plant., App., p. 521 (1771).

Simia longimana, Wagner in Schreb. Säugeth. i., p. 66, pl. iii., figs. 1, 2 (1775); Erxl., Syst. Reg. An., p. 9 (1777).

Simia lar, Bodd., Elench. An., p. 55 (1785); Fischer, Syn. Mamm., p. 12 (1829; in part).

Pithecus lar, Latr., Hist. Nat. Buff., xxxvi., p. 276 (1809).

Pithecus varius, Latr., *op. et loc. cit.*

Pithecus variegatus, Geoffr., Ann. Mus., xix., p. 88 (1812).

Hylobates lar, Illig., Abhandl. Akad. Berl., p. 88 (1815); Martin, Mammif. Anim., pp. 416, 433 (1841); Blyth, J. A. S. Beng., x., p. 838 (1841); Gray, Cat. Monkeys Brit. Mus., p. 10 (1870); Scl., P. Z. S., 1870, p. 86, pl. v.; Schlegel, Mus. Pays-Bas, vii., p. 15 (1876); Anders., Zool. Res. Exped. Yun-nan, p. 5 (1878; with full synonymy); Blanford, Faun. Brit. Ind., Mamm., p. 7 (1891).

Hylobates variegatus, Kuhl, Beitr. Zool., p. 5 (1820; young); Desmar., Mamm., p. 51 (1820); Is. Geoffr., Zool. Bélang. Voy., p. 27 (1834).

Simia albimana, Vig. et Horsf., Zool. Journ., iv., p. 107 (1828).

Simia variegatus, Fischer, Syn. Mamm., p. 11 (1829).

Hylobates albimanus, Is. Geoffr., Zool. Bélang. Voy., p. 29 (1834).

Hylobates entelloides, Is. Geoffr., C. R., xv., p. 717 (1842).

Hylobates leuciscus, Cantor, Ann. and Mag. N. H., xvii., p. 338 (1846).

Characters.—Male.—Everywhere deep black, except the face, which is reddish-brown, with the thick hair round it light grey or white, and the hands and feet, which are pale yellow or white; superciliary ridges, whiskers and beard, white. The hair on the fore-arm is nearly erect, with only a very slight forward inclination. The species is subject to great variation, and may be of all shades, from deep black to entirely whitish-yellow (*H. entelloides*).

Head round; the eyes large; the cheeks flat and depressed; the nose slightly projecting, its tip furrowed, and its nostrils small and converging; the upper lip is divided in the centre by a vertical furrow. In very young individuals the top of the ear is markedly pointed.

Skull with the orbital ridges larger, the muzzle shorter, and the teeth smaller than in *H. hoolock*; the second and third toes sometimes united by a membrane.

Female.—Generally similar to the male, but more frequently entirely pale yellow, with the hands and feet paler.

Distribution.—Aracan, Lower Pegu, Tenasserim, and the Malay Peninsula.

Habits.—The White-handed Gibbon inhabits the upland

forests as high as 3,500 feet above the sea; living in troops numbering from ten to twenty-five. Its habits are very similar to those of other Gibbons, although Tickell observed that they were less light and active than the Hoolock, and had a different voice. It is said to drink, as the Siamang does, by dipping its hands into the water, and not to put its mouth down to it like the Hoolock. "So entirely does it depend on its hands for locomotion amongst trees," remarks Dr. Blanford, "that it carries everything in its feet. Tickell, from whom I take these details, says that he has seen a party of *H. lar* escape thus with their plunder from a Karen garden in the forest." "The young are born in the early part of the cold season," continues Dr. Blanford, "and each sticks to the body of its mother for about seven months, after which it begins gradually to shift for itself."

V. THE HOOLOCK. *HYLOBATES HOOLOCK*.

Simia lar, Phil. Trans., lix., p. 607 (1769)

Simia hoolock, Harlan, Tr. Am. Phil. Soc., iv. (n. s.), p. 52, pl. 2 (1834.)

Hylobates coromandus, Ogilby, P. Z. S., 1837, p. 689; Martin, Mammif. Anim., p. 415 (1841); Is. Geoffr., Arch. Mus., ii., p. 535 (1843); Blyth, J. As. Soc. Beng., xiii., p. 464 (1844.)

Hylobates hoolock, Waterh., Cat. Mamm. Mus. Zool. Soc., p. 3 (1838); Martin, Mammif. Anim., p. 416 (1841); Is. Geoffr., Arch. Mus., ii., p. 535 (1843); id., Cat. Méth. Primates, p. 9 (1851); Schlater, P. Z. S., 1860, p. 86, pl. v.; Gray, Cat. Monkeys Brit. Mus., p. 11 (1870); Schl., Mus. Pays-Bas, vii., p. 14 (1876); Anderson, Zool. Res. Exped. Yun-nan, p. 1 (1878; with full synonymy); Blanford, Faun. Brit. Ind., Mamm., p. 5 (1891).

Hylobates hulok, Wagner, in Schreb., Säugeth. Suppl., v., p. 20
(1855.)

Hylobates niger, Harlan ; Ogilby, P. Z. S., 1840, p. 21.

Characters.—Black all over, except a frontal band, continuous or interrupted, above the eyes. There is a good deal of variation in this species, more in the female than in the male, the black being in many individuals of a brownish tinge.

Young Males.—Often of a brownish-black, like many of the females.

Female.—With the black generally of a brownish tinge, but often pale or greyish-yellow ; sometimes the upper parts are pale yellow and the under parts and side of the head brown, and the area round the nude parts of the face white. (*Anderson.*)

Distribution.—Lower ranges of Bhutan—its furthest western range—(*Pemberton*) ; hill ranges of Upper Assam (*Blyth*), Sylhet, Chittagong, Aracan.

Habits.—“ I first met with this species in Upper Burma,” Dr. Anderson relates, “ in passing through the magnificent defile of the Irawaddy, below Bhamo, where the river is enclosed by high hills, covered with dense forest, for about fifteen miles of its course. It was early morning, and the air was resonant with the loud cries of this Gibbon ; large troops were answering each other from the opposite banks, and the hills echoed and re-echoed the sound. The Hoolock is also common on the Kakhyen hills, on the eastern frontier of Yun-nan ; and there, too, my attention was called to them at daybreak, when they passed up from their sheltered sleeping-ground in the deep and warm valleys to heights of about 4,000 feet. We, in the middle distance, first caught a faint murmur of voices, but

every minute it became more and more distinct, till at last the whole troop rushed past in a storm of sound, vociferating *Whoko ! whoko !* and in a few more minutes their cry was heard far up the mountain-side. Considering that their progress is almost exclusively arboreal, the rapidity with which they make their ascent is wonderful.

“Associated with this arboreal habit of progression, we find that *H. hoolock* derives its nourishment from leaves, insects, eggs, and birds, the essential features of sylvan life.” It also eats the leaves of *Ficus religiosa*, the aquatic *Convolvulus* (*Ipomœa reptans*), and the brilliant red flowers of the *Canna indica*. It “has a marked partiality,” continues the same naturalist, “for Spiders and their webs, which become tangled in its long slim fingers, and Orthopterous insects are regarded by it with special favour, and over which it utters its peculiar cry of satisfaction. Eggs also are to it a *bonne bouche*. It was first in the Calcutta gardens that I become aware of the circumstance that small living birds were devoured by it with a method and eagerness which has left no doubt in my mind that this species, in its natural state, must be a scourge to the feathery tribe.”

The Hoolock lives in large flocks as a rule, keeping chiefly to the hill forests. Sometimes, however, an old male may be discovered living by himself.

They move chiefly by means of their long arms, by which they swing themselves for prodigious distances from branch to branch, and from tree to tree. They descend hill-sides at a surprising pace, their descent being accomplished by grasping bamboos or branches that bend beneath their weight, and allow them to drop until they can seize the ends of other bamboos or branches lower on the slope and take another mighty

swing downwards. They also ascend with great rapidity, swinging themselves from tree to tree. (*Blanford.*)

When walking on the ground the Hoolock rests on its hind feet alone, with the sole flat on the ground and the great-toe widely separated from the other digits. "They walk erect," writes Dr. Borrow, "and when placed on the floor, or in an open field, balance themselves very prettily by raising their hands over their head and slightly bending the arm at the wrist and elbows, and then run tolerably fast, rocking from side to side; and if urged to greater speed they let fall their hands to the ground and assist themselves forward, rather jumping than running, still keeping the body, however, nearly erect."

VI. THE HAINAN GIBBON. *HYLOBATES HAINANUS*.

? *Hylobates pileatus*, Swinhoe, P. Z. S., 1870, p. 224 (nec Gray).
Hylobates hainanus, Thomas, Ann. & Mag. Nat. Hist. (6), ix,
p. 145 (1892).

Characters.—Very closely related to *H. hoolock*, but differs by the entire absence of the white superciliary streak, the animal being jet black all over.

Distribution.—The island of Hainan.

Habits.—This species has not been seen alive in its native haunts by any European naturalist. Consul Swinhoe made many efforts to obtain a living specimen in the island of Hainan, but was unsuccessful. "I never ceased," he says, "to enquire after it. Every one knew that such an animal did exist, and many had seen it; but they all spoke of the great difficulty of keeping it alive. At Taipingsze (Central Hainan) the wonderful stories that were told about it showed that the Yuen was not often seen there. The magistrate of that district assured me,

with a serious face, that it had the power of drawing into its body its long arm-bones, and that when it drew in one arm, it pushed out the other to such an extraordinary length, that he believed the two bones united in the body; and he said that the bones of the arm were used for chop-sticks." Mr. Swinhoe, however, published, in 1870, some curious extracts from the Chinese gazetteer of the Kiung-shan district of Hainan, which with little doubt relate to this interesting animal, of which skins have, since he wrote, been received at the British Museum, while a young individual lived for some months in 1893 in the Zoological Gardens of London, where it attracted much attention. The gazetteer says as follows: "Yuen: male black, female white; like a Macaque but larger, with the two fore-arms exceedingly long. Climbs to tree-tops and runs among them backwards and forwards with great agility. If it falls to the ground, it remains there like a log. Its delight is in scaling trees, as it cannot walk on the ground. Those desiring to rear it in confinement should keep it among trees; for the exhalations of the earth affect it with diarrhœa, causing death; a sure remedy for this, however, may be found in a draught made of the syrup of fried Foo-tsze (seeds of *Abrus precatorius*, Linn.)." The gazetteer then continues: "Hainan has also the Rock Yuen. It is small, about the bigness of one's fist. If allowed to drink water, it grows in size. This is also called Black Yuen, and is now likewise difficult to obtain."

Those who had an opportunity of observing the specimen that lived in the Zoological Gardens, will recall its extraordinary acrobatic feats, which were performed with marvellous precision and certainty, either with one or with both hands, and yet with the most careless air. It offered a striking contrast to an Orang-utan, which occupied the adjoining cage. This more

robust Ape exhibited in its arms equally perfect powers of climbing ; but it moved with the greatest circumspection, deliberation, and composure, exhibiting none of the volatile activity so characteristic of the Gibbons ; but moving only one pair of its limbs at a time, and only when the other pair had firm hold of some support.

VII. THE SIAMANG GIBBON. HYLOBATES SYNDACTYLUS.

Pithecus syndactylus, Desmar., Mamm., p. 531 (1820).

Hylobates syndactylus, F. Cuv., Hist. Nat. Mammif., pl. iv. (1821);

Is. Geoffr., Cat. Méth. Primates, p. 9 (1851); Bennett, Wanderings in N. S. Wales, ii., p. 151 (1834); Martin, Mammif. An., p. 420 (1841); Flower, Nat. Hist. Rev., 1863, p. 279 (cum fig.); Giebel, Z. Ges. Nat., p. 186 (1866); Schl., Mus. Pays-Bas, vii., p. 22 (1876); Anderson, Zool. Res. Exped. Yun-nan, p. 10 (1878; with full synonymy).

Simia syndactylus, Raffl., Tr. Linn. Soc., xiii., p. 241 (1822).

Siamanga syndactyla, Gray, Cat. Monkeys Brit. Mus., p. 9 (1870), id., *op. cit.*, p. 9 (1870); H. O. Forbes, Nat. Wand. East. Arch., p. 129 (1885).

(Plate XXXVIII.)

Characters.—This is the largest species of the genus, measuring more than three feet ; it is stouter than *H. hoolock*, and its hair is entirely glossy black, having no white hairs anywhere ; the face is black, as is also the distensible skin of the large bare patch on the throat, which overlies its great laryngeal pouch. The second and middle toes are united by a web as far as the last joint. The hair on the arms and fore-arms converges towards the elbow.

The skulls in most of the species of this genus closely resemble each other ; that of the Siamang is distinguished by its



THE SIAMANG GIBBON.

larger size, and in having the supra-orbital ridges more developed, while the occipital region is more truncated, and there is at the symphysis of the lower jaw a true, though slight, chin.

The frontal lobes of the brain are broad and much flattened, and not full and rounded as in the Orang. The olfactory bulbs project forward, slightly beyond the frontal lobes of the cerebrum; the occipital lobes are much reduced, while the large cerebellum projects distinctly backwards from below the cerebrum—characters in which this very highly organised member of the genus shows a retrogressive development, thus differing from all the other Man-like Apes, in all of which the cerebrum entirely covers both the olfactory lobes in front, and the cerebellum behind.

The large laryngeal sac, communicating by two openings with the larynx, and formed by the extension of the thyro-hyoid membrane, distinguishes this from all the other Gibbons.

Distribution.—The Siamang is confined to the island of Sumatra. It has been recorded from Malacca and Tenasserim; but some doubt exists as to the accurate determination of the individuals referred to, no really authentic specimen having yet been obtained out of Sumatra.

Habits.—The Siamang is gregarious, frequenting the great forest-trees from 200 to 300 feet above the sea up to 3,000 or 4,000 feet.

I made the acquaintance of this species in Southern Sumatra, and during my stay in that island had various opportunities of observing many of them in their homes. It was not uncommon to come suddenly on a colony of them both in the forest and among the tall isolated outliers, when they happened to be covered with fruit. The satiated members of the company

might then be often seen hanging by one arm from a bare branch, with perhaps eighty unobstructed feet between them and the ground, making the woods resound with their loud barking howls, uttered apparently for pure love of making a noise. On one occasion a young one, found clinging to its mother, which had been shot, was brought in alive. It had been only stunned by a pellet on the head, and had no bones broken. In a very short time it became a most delightful companion. The following observations in reference to it are taken from the writer's Journal: "Its expression of countenance is most intelligent and often very human; but in captivity it generally wears a sad and dejected aspect, which quite disappears in its excited moods. With what elegance and gentleness it takes with its delicate taper fingers whatever is offered to it! Except for their hairiness, its hands, and, in its youth at all events, its head, seem to me more human than those of any other Ape's. It rarely, however, brings its thumb into opposition with the other fingers, but usually clasps the whole hand, without that digit, on an object. It will never put its lips to a vessel to drink, but invariably lifts the water to its mouth, by dipping in its half-closed hand and then awkwardly licking the drops from its knuckles. It generally sits with its arms crossed over its chest, and its fingers overlaid behind its head. The gentle and caressing way in which it clasps me round the neck with its long arms, laying its head on my chest, and watching my face with its dark brown eyes, uttering a satisfied crooning sound, is most engaging. Although it often inflates its laryngeal sac, it rarely gives utterance to more than a yawn-like noise or suppressed bark; but this dilatation has no reference apparently to its good or bad temper, although, when very eager and im-

patient for anything, a low pumping bark is uttered. Every evening it makes with me a tour round the village square, with one of its hands on my arm. It is a very curious and ludicrous sight to see it in the erect attitude on its somewhat bandy legs, hurrying along in the most frantic haste, as if to keep its head from outrunning its feet, with its long free arm see-sawing in a most odd way over its head to balance itself, and now and again touching the ground with its finger-tips or its knuckles. That they can leap the great distances from tree to tree ascribed to them is no doubt an accurate observation; but they appear to be sometimes terror-stricken and unable to perform these feats to save their lives. During the felling of the forest near this village, a small colony of Siamangs got isolated on a tree separated from the next clump by some thirty feet or so. They scampered up and down in the crown of the tree howling in the most abject terror at every stroke of the axe; yet they would not venture to leap the intervening space, and even, when the tree was falling, they did not attempt to save themselves by springing to the ground, but perished in its downfall.

“When teething my companion suffered severely—as the human infant so often does—both locally and constitutionally, as indicated by boils and inflamed finger-tips. On lancing and poulticing the latter, and extracting some of its obstructing teeth, the poor creature seemed greatly relieved, and I was delighted to watch it recover, without contracting for me any antipathy for the pain I had inflicted on it, but rather the reverse.” At a later date the following extract occurs:—

“During my march to the coast my Siamang accompanied me, occupying, with the most grave demeanour, a seat on one of the packages carried in the rear, near to myself. Here it

sheltered its head, to the amusement of all whom we met, under a Chinese umbrella, which I had bought for it to protect it from the midday sun, and for which, after every halt, it held out its hands in the most knowing way, screaming lustily if the porters dared to move on before it had comfortably arranged itself. To my intense regret, a misadventure put an end to a most charming existence, before I could send it to London."

THE ORANG-UTANS. GENUS SIMIA.

Simia, Linn., Syst. Nat., i., p. 34 (1766); Erxl., Syst. Régne An., p. 6 (1777; part).

Pithecus, Geoffr., Ann. Mus., xix., p. 87 (1812); Huxley, Anat. Verteb. An., p. 403.

Pongo, Geoffr., Ann. Mus., xix., p. 89 (1812).

This genus contains one species, well known as

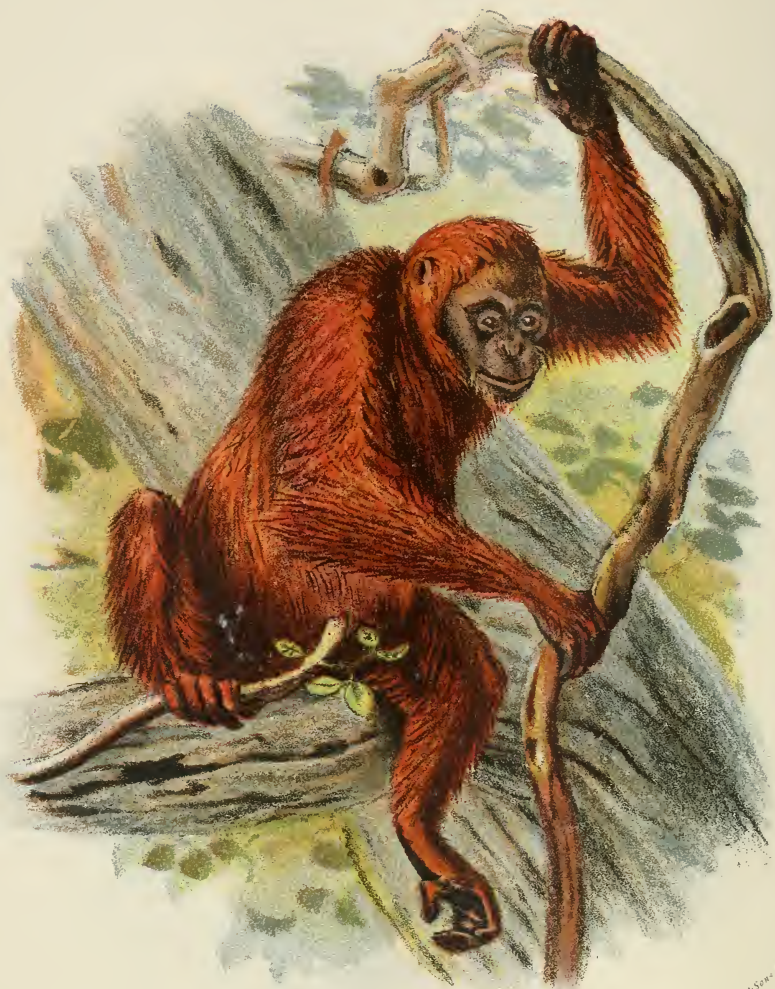
THE ORANG-UTAN. SIMIA SATYRUS.

Simia satyrus, Linn., Syst. Nat., i., p. 34 (1766); Kuhl, Beitr. Zool., p. 4 (1820); Schreb., Säugeth., i., p. 54, pls. 2, 2 B. (1775); Fischer, Syn. Mamm., p. 9 (1829); Owen, Tr. Z. S., i., p. 344, pls. 49, 53-56 (1835); Wallace, Malay Archip., i., p. 62 (1869); Gray, Cat. Monkeys Brit. Mus., p. 8 (1870); Schlegel, Mus. Pays-Bas, vii., p. 9 (1876).

Simia agrias, Schreb. Säugeth., i., pl. 2, ii. B et ii. C (1775).

Pongo wurmbii, Geoffr., Ann. Mus., xix., p. 89 (1812); Kuhl, Beitr. Zool., p. 21 (1820).

Papio wurmbii, Latr. Singes, i., p. 196.



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Pithecus satyrus, Blumenb., Abbild., Naturh. Geg., fig. xii. (1810); Geoffr., Ann. Mus., xix., p. 88 (1812); Latr., in Buff. Hist. Nat., xxxv., p. 166, pl. 3; xxxvi., p. 276; Cuv. et Geoffr., Hist. Nat., Mamm., livr. xlii.; Desmar., Mamm., p. 50 (1820); Martin, Mammif. Anim., p. 388 (1841); Owen, Tr. Z. S., iv., p. 82, pl. 29 (1862).

Simia wurmbii, Kuhl, Beitr. Zool., p. 21 (1820); Fischer, Syn. Mamm., p. 32 (1829); Owen, Tr. Z. S., ii., p. 165, pls. 30-32 (1841); Brooke, P. Z. S., 1841, p. 55 (Mias Pappan).

Pithecus wurmbii, Owen, Tr. Z. S., iv., p. 95, pl. xxxiii. (1862).

Pongo abelii, Clarke, Asiat. Res., xvi., 489 (1826); id., Edinb. Phil. Journ., p. 375 (1827).

Simia abelii, Fischer, Syn. Mamm., p. 10 (1829; Sumatra).

Simia morio, Owen, P. Z. S., 1836, p. 92; id., Tr. Z. S., ii., p. 168, pls. 33, 34 (1838); Brooke, P. Z. S., 1841, p. 55 (Mias Kassar); Wallace, Malay Archip., i., p. 84 (1869); Sclater, P. Z. S., 1891, p. 301; Beddard, Tr. Z. S., xiii., p. 20 (1893; Sumatra and Borneo).

Pithecus morio, Martin, Mammif. An., p. 395 (1841).

Simia gigantea, Pearson, J. A. S. Beng., x. (2), p. 660 (1841).

Pithecus bicolor, Is. Geoffr., Arch. Mus., Paris, ii., p. 526 (1841; Sumatra).

Pithecus owenii, Blyth, J. A. S. Beng., xxii., p. 375 (1853).

Pithecus curtus, Blyth, *op. cit.*, xxiv., p. 525 (1855).

(Plate XXXIX.)

Characters.—The Orangs are large and heavy in build, with the head set on a very thick neck, the hair long and directed forward, and the abdomen round and protuberant. The naked face is melancholy. On each side of the face there is, in the

full grown male, but not in the female, a large, soft, smooth tumour-like and flexible expansion, which gives a remarkable breadth to the visage. The forehead is nude and purplish in colour ; the middle of the face across the nose is sooty-brown. The lips are broad, extremely mobile, and of the colour of the skin—generally of a yellowish brown ; and, when eating and drinking, the animal thrusts them far out. The lower jaw retreats at once from the lips, and there is therefore no chin, as so recognised in Man. The ears are more like those of Man, small and flat. The arms are very long, reaching to the ankles in the erect posture, their span being twice the animal's height. The arm is equal in length to the fore-arm ; the hands are long and narrow. The fingers are united by a web ; the thumb short and often without its terminal joint. The back of the hand is but slightly haired. The hair on the arm is directed downwards and that on the fore-arm upwards, so as to meet at the elbow. The legs are very short and bowed at the ankles ; the long and narrow foot, which is articulated obliquely to the leg, is longer than the hand and (except in the Gorilla) is longer than in any other Ape. The great-toe is very short and is often destitute of a nail.

The cranium is very variable in form ; the crown is high and pointed, the forehead round and elevated, and the occipital region convex. No two individuals are exactly alike. "The slope of the profile, the projection of the muzzle, together with the size of the cranium, offer differences as decided as those existing between the most strongly marked forms of the Caucasian and African crania in the human species. The orbits vary in width and height ; the cranial ridge is either single or double, either much or little developed, independent of age, being sometimes more strongly developed in the less

aged animal." (*Wallace*.) The supra-orbital ridges are prominent, without being particularly so. The contour of the head is more human in form, however, in youth than in age, when the forehead is large and convex. The canine teeth are very large and tusk-like in the male, but smaller in the female. The upper molars exhibit on their crowns complex rugosities; they have four cusps and an oblique ridge, as in Man, from the front inner, to the hind outer, cusp; the lower molars are five-cusped. The permanent canine teeth sometimes appear before the last permanent molar has come into place.

The thigh-bone (*femur*) has no round ligament binding its articular head into its socket in the pelvis, a disposition which, while it affords greater flexibility and freedom to the hind-limbs in climbing, gives it much less firmness in walking on the ground. The proportionate length of the foot to its limb is greater in this genus than in any other of the *Anthropoidea*. The ankle (*tarsus*) is very short, and the bones (*phalanges*) of the toes form the longest part of the foot. The great-toe is especially short and divergent, its terminal bone being often absent, while the bones of the digits are long and curved. On account of the form of certain bones of the tarsus and their immobility the foot is set obliquely to the leg through the action of one of its muscles (the *tibialis anticus*), so that the sole is pulled to the inside when walking. The outer edge of the foot, with the upper side of the fourth and fifth toes, is therefore applied to the ground in the act of progression, while the spread thumb supports most of the animal's weight. The wrist (*carpus*) contains the complete number of nine bones, as it possesses the *os centrale* wanting in Man and the Chimpanzees.

The breast-bone in the Orang is composed of ossifications

arranged in pairs, instead of being formed of only two bones, as in the other members of the family.

Between the neck and the complex and solid sacral bone there are sixteen vertebræ, and there are twelve pairs of ribs, as in Man. The vertebral column presents slight but distinct indications of the curvature so characteristic of Man, and is nearly as much concave forward in its dorso-lumbar region as in a child.

The Orang-utan has no uvula as in Man and in the Chimpanzees. It possesses enormous air sacs—dilatations of the lateral cavities (ventricles) of the larynx, found in Man—which extend over the throat, the top of the chest, and as far as the arm-pits; these may even unite in the middle line. Its great-toe and thumb lack the long flexor muscles which are present in Man and in the Chimpanzees.

“Of all Apes, the Orang has the brain which is most like that of Man; indeed, it may be said to be like Man’s in all respects, save that it is much inferior in size and weight, and that the cerebrum is more symmetrically convoluted and less complicated with secondary and tertiary convolutions.” (*Mivart.*) The cerebral hemispheres are higher in proportion to their length than in any other *Anthropomorpha*, but they are elongated and depressed, as compared with Man. (*Huxley.*)

The colour of the hair of the Orang is a brick- or yellowish-red all over, but in old males it is sometimes darker on the limbs. Its length (twelve to sixteen inches) is greatest, and its character coarsest, on the arms, thighs, and shoulders; the face, ears, and throat are bare, and the skin of a reddish- or yellowish-brown colour; but there is a thin beard on the chin. The back of the hand and fingers are also thickly haired; on

the arms the hair grows towards the elbow, as on the fore-arm, both meeting in a point at the elbow.

Between childhood and middle age the skin varies in colour from dark yellowish in the younger individuals to blackish-brown, or black, in the adults (the latter colour largely predominating). Very often the face and neck are almost or quite black, the palms light brown, and the breast and abdomen mulatto-yellow. (*Hornaday.*)

In size also the Orang varies greatly; the males being larger than the females. The largest male shot by Wallace measured 4 feet 2 inches. Hornaday, however, shot several exceeding 4 feet 4 inches, his tallest being 4 feet 6 inches, and one male was 3 feet 10½ inches; while his largest female measured 4 feet, and the smallest adult female 3 feet 6 inches. The breadth across the face in males varies from 11½ to 13½ inches, and in females 5½ to 6 inches. The young at birth is large in comparison with the size of the female. A male weighs often from 120 to 160 lbs.

Distribution.—The Orang-utan is confined to the islands of Borneo and Sumatra, in the East Indian Archipelago. In Sumatra it is far less common than in Borneo, and is found on the lowlands of the eastern coast, in the Palembang Residency, and the Djambi Sultanate. As far as I could ascertain, the natives of the southern portion of Palembang and of the Lampongs were quite ignorant of the animal, except as a name. In Borneo it inhabits the low forest-covered swamplands between the coast and the interior mountains, from the north of the island, round the west, southern, and eastern coasts, as far as the Mahakkam river, if not round the entire coast, as is most likely. In the dry season they retire into the

depths of the forest. In the fruit season they come nearer to the coast, while at the height of the rains they frequent the river banks.

Habits.—The Orang-utan, the “forest-living Man” of the Malays, and the “Mias” of the Bornean natives, lives solitary in the leafy tops of the trees in the forests, except at the pairing season. A female is generally accompanied by one of her progeny, sometimes by two, the one always an infant, and the other a more or less grown but immature individual of a previous birth; for her young—of which she has only one at a birth—do not shift for themselves before they are approaching two years of age. At what age they attain maturity is unknown, but it is probably not before twelve to fifteen years. The infant clings by its arms to its mother when she is climbing, by grasping the hair of her arm-pits, while its legs embrace her sides above the hip. As already observed, the Orangs have none of the marvellous agility of the Gibbons. They are slow and deliberate in their movements; “surprisingly awkward and uncouth,” according to Sir James Brooke; but their long and extremely powerful arms and hook-like fingers, which close with an amazing rigidity of grip, and their mobile legs and hand-like feet, enable them to lift and swing their bodies with great precision from branch to branch and tree to tree. “I have frequently seen them,” says Hornaday, “swing along beneath the large limbs as a gymnast swings along a tight rope, reaching six feet at a stretch. When passing from one tree to another, the Orang reaches out and gathers in its grasp a number of small branches that he feels sure will sustain his weight, and then swings himself across.” On the ground all this is very different. He walks very badly and unsteadily; he uses his arms as crutches, leaning his weight upon them with his fingers as already described, and

swings himself forward on them. On the ground the Orang does not move, according to Sir James Brooke, so fast as to preclude a man keeping up with him easily through a clear forest. "The very long arms, which, when he runs, are but little bent, raise the body of the Orang remarkably, so that he assumes much the posture of a very old man bent down by age, and making his way along by the help of a stick." (*Huxley*.) The Orang, however, rarely comes to the ground of his own accord.

Mr. Martin gives the following account of a specimen which lived in the Zoological Gardens in London many years ago:—"Its attitudes were as varied as can be imagined, its actions slow and deliberate; excepting, indeed, on one or two occasions when it wished to follow its keeper, who had opened the door of its cage; even then it did not bound from branch to branch like a Monkey, but stretching out its arms, and grasping the branches within its reach, it swung itself onward, and so descended to the floor, along which it hobbled awkwardly and unsteadily. One thing, as respects both the hands and feet of this Orang, could not be overlooked; namely, that their mode of application to the branches, during the arboreal evolutions of the animal, was hook-like; and, from the power of the adductor muscles of the thumb, and flexor muscles of the fingers, tenacious and enduring, rather than tight and fixed. This observation is especially applicable to the feet; in these the shortness of the thumb, though capable in itself of firm and close application, renders it rather a fulcrum, against which the long fingers oppose their stress, than, by folding upon them, an adjunct to them in the act of prehension; and hence, though admirably fitted for the movements of the animal among the trees of the forest, and the kind

of hold necessary for freedom and security, the foot of the Orang is, perhaps, less energetic in the grasp than that of the semi-arboreal Chimpanzee, in which the hind-thumb is proportionately longer, and the foot broader, than in the Orang."

The Orang drinks by dipping its fingers into the water, as the Siamang does, and sucking the water off its knuckles, or dropping it into its protruded trough-like lower lip.

"The rude *hut* which they are stated to build in trees, would be more properly called a seat or nest, for it has no roof or cover of any sort. The facility with which they form this nest is curious, and I had an opportunity of seeing a wounded female weave the branches together and seat herself within a minute." (*Sir James Brooke*.) "The Orang usually selects," writes Mr. Hornaday, "a small tree, a sapling, in fact, and builds his nest in its top, even though his weight causes it to sway alarmingly. He always builds his nest low down, often within twenty-five feet of the ground, and seldom higher than forty feet. Sometimes it is fully four feet in diameter, but usually not more than three, and quite flat at the top. The branches are merely piled crosswise. I have never been able to ascertain to a certainty, but it is my opinion that an Orang, after building a nest, sleeps in it several nights in succession, unless he is called upon to leave its neighbourhood." In this nest he sleeps during the night or lies spread out on his back during the day, with his hands and feet grasping the nearest branches. The food of the Orang-Utan—whose eating-time is during the middle of the day—consists of leaves and nuts, especially of the durian, the rambutan, and the mangosteen.

The Orang-Utan is of a very shy and uncertain disposition. If captured when full-grown, it is wild and ferocious; when

young it is easily trained ; but never lives in captivity to attain maturity. When attacked and hard driven by human enemies, and it gets to close quarters with them, it can be a formidable and dangerous antagonist, and has been known to fatally injure its assailants. It will rarely, unprovoked, attack a man. "In one case," as Dr. A. R. Wallace has recorded, "a female Mias on a durian-tree kept up for at least ten minutes a continuous shower of branches and of the heavy spined fruits as large as 32-pounders, which most effectively kept us clear of the tree she was on. She could be seen breaking them off and throwing them down with every appearance of rage, uttering at intervals a loud, pumping grunt, and evidently meaning mischief." They fight and defend themselves with their hands, and appear to seize and bite each other's fingers. Many of the specimens shot in the forest of Borneo have lost one or more of their fingers or toes ; and present scars on the face (especially on the lips) and bodies from the teeth of their antagonists.

"When wounded he betakes himself to the highest attainable point of the tree, and emits a singular cry, consisting at first of high notes, which at length deepen into a low roar, not unlike that of a panther. While giving out the high notes, the Orang thrusts out his lips into a funnel shape ; but in uttering the low notes he holds his mouth wide open, and at the same time the great throat bag, or laryngeal sac, becomes distended." (*Huxley*.)

The name given by the Dyaks to the larger species is "Mias Pappan." There is, however, a smaller variety, which they designate "Mias Kassu," of which Dr. Wallace has given an excellent and detailed account. These Mias Kassu have no tumour-like expansions on the sides of the head ; the median crest is

absent from the skull, for the muscular ridges remain some distance apart; the teeth are very large, especially the canines and the middle upper incisors. The females, which are smaller than the males, are also without the cheek-swellings and the prominent crests of the male, and have smaller canine teeth. This variety, named *Simia morio* by Sir R. Owen, bears a close similarity to that found in Sumatra. It has been considered a distinct species both by Owen and Wallace, but the variation, as the latter naturalist himself admits, is so very great in just those characters which have been considered to separate "Mias Kassu" from "Mias Pappan," that it is highly probable that both are of the same species, but of different ages. Mr. Beddard found that an Ape exhibited in the Zoological Gardens as an adult example of *S. morio* was in reality immature.

THE GORILLAS. GENUS GORILLA.

Troglodytes, Geoffr., Ann. Mus., xix., p. 87 (1812).

Gorilla, Is. Geoffr., C. R., xxxiv., p. 84, note (1852).

This genus, like the preceding, contains but a single species,

THE GORILLA. GORILLA GORILLA.

Troglodytes gorilla, Wyman, Bost. Journ. Nat. Hist. (2), v., p. 419, pls. 1-4 (1847); Winwood-Reade, P. Z. S., 1863, p. 171; Owen, Tr. Z. S., ii., p. 381; v., pp. 1, 243, pls. i.-xiii., and xliii.-xlix; Schl., P. Z. S., 1877, p. 303; Cunningham, Mem. Roy. Irish Ac., p. 1 (1886).

Gorilla gina, Is. Geoffr., Arch. Mus., viii., pls. 2-4 (1852).

Troglodytes savagei, Owen, P. Z. S., 1848, p. 29.

Gorilla savagei, Is. Geoffr., Rev. et. Mag. de Zool., p. 104 (1853); Gray, Cat. Monkeys Brit. Mus., p. 7 (1870).

Pithecus gorilla, Blainv., Osteogr., pls. 2, et 5 bis (errore *P. gesilla*).



THE GORILLA.

Satyrus adrotes, Meyer, Arch. f. Naturg., p. 182 (1856).

Simia gorilla, Schl., Mus. Pays-Bas, vii., p. 8 (1876).

Gorilla mayema, Alix et Bouv. C. R., lxxxv., p. 58 (1878).

(Plate XL.)

Characters.—The face of this massive and most ponderous of all the Apes is naked and black, very wide and elongated. The large head has a ridge of hair along the central crest, and its lower jaw is very wide and far extended backward. The nose is long and high, and broad and flat at its extremity, and is also grooved longitudinally. The muzzle is broad, the mouth wide; the upper lip short, and the lower mobile and protrudable. The eyes are large; the ears naked and black, with the posterior upper angle pointed, and the lower margin produced into a rudimentary pendulous lobule.

The cranial region is comparatively small. The supra-orbital ridges, in which the eye-brows are set, form, from their prominence, a marked feature of the face. They overhang the eyes, causing them to appear very much sunk in the skull. The neck is short, the chest and shoulders wide, thickly haired and suggestive of great strength.

The arms are much longer than the fore-arms, and the feet, which have no in-step, exceed the hands in length, and are much broader than in other genera of the *Simiidae*. The heel, which in the Orangs is small, is in the Gorilla strongly developed, on which account it can easily stand erect. Its opposable great-toe is large and flattened, and has a wide nail; while the lower joints of the second, third, and fourth toes—which are also short and thick—are united by a web. The arms, on which the hair converges on both sides of the joint towards the elbow, are so long as to reach down to the middle

of the leg when the Gorilla stands erect. The thumb is short and thick, and is tipped with a broad nail. The hand is broad, thickly haired on the back, and wrinkled from the wrist to the fingers. The fur of the Gorilla consists of long, thick, straight, or stiffly curved bristles, beneath which is a shorter curled woolly hair, or under-fur.

The skull of the adult male has very protruding jaws, and enormous supra-orbital ridges. The cheek-bones are broad; the temporal muscles meet along the top of the cranium, and have enormous bony crests for their attachment. The same is the case on the back of the head for the powerful neck-muscles. The true form of the skull is obscured by these great ridges and by the extent to which the face protrudes. The brain-case is better shaped internally than appears externally. The orbits have the same form as in Man.

The canine teeth are enormously developed. The upper molars are four-cusped, and have the oblique ridge, already often referred to, from the front inner to the hind outer cusp, the posterior of the three being much larger than the other two, a character distinguishing its jaw from that of Man and the Chimpanzees. The anterior lower molars have five cusps, three on the outer side and two on the inner, as in Man.

The lower jaw has no true chin, and its symphysis is very long and quite different from what is seen in the human symphysis. The opening for the passage of the spinal cord is situated in the posterior third of the base of the skull, and not, as in Man, nearly in the centre.

The vertebræ of the neck, back, and loins number the same—seventeen—as in Man; but there are thirteen parts of ribs instead of twelve. The neck-vertebræ have long spines which contribute to the thickness of the neck. The curvature, characteristic of

Man, in the lumbar region of the vertebral column of the young Gorilla, is more developed than in the Chimpanzee, and in both are earlier developed than in Man. (*Symington.*)

The wrist (*carpus*) contains but eight bones, as there is no central (*os centrale*) bone, a character in which it agrees with Man and the Chimpanzee, but differs from the Orang.

The volume of the brain in the largest Gorilla rarely exceeds $34\frac{1}{2}$ cubic inches, which is only half the capacity of the human skull. It may be safely said that an average European child, of four years old, has a brain twice as large as that of an adult Gorilla. The weight of a healthy human brain never falls below 31 ounces; that of the largest Gorilla has probably never reached 21. (*Huxley.*)

In the brain of the Gorilla the cerebellum can be seen between the deep longitudinal fissure which separates the two halves of the cerebrum. It agrees in this with the Orang and *Anthropopithecus calvus*—the latter exhibiting even a greater divergence of the cerebral lobes.

The young male Gorilla differs much from the adult; its central cranial crest is less prominent than the occipital ridge for the neck muscles.

The female is much smaller than the male, but the cheeks are relatively broader; the cranial crests and ridges are less strongly marked, and the canines shorter and less powerful. Her breasts are long and pointed, not globular.

The height of the adult male Gorilla is over six feet, but the female rarely exceeds four feet six inches.

The general colour of the Gorilla is black or blackish; the whole skin of the face is glossy, set with a few hairs, and deep black; the crown reddish-brown, sometimes of a dark brown, the hairs being dun-coloured at the root, grey in the middle,

and dark brown at the tip; on the sides of the face the hair is dark brown or black, grey at the root; on the neck and shoulders the hair is grey at the root, and lighter towards the point. The back, the region of the humerus, and the thighs are brownish, the hair being pale grey at the root, blackish-brown further up, and dark grey at the termination; the forearms, the hands, ankles, and feet, dark brown or black; round the posterior is a circle of white hair in some, in others of brownish-yellow. Old individuals become grey or grizzled.

Distribution. — Western Equatorial Africa, between the Cameroons and the Congo. This region presents a variety of hill and dale; the uplands are clothed with forest, and the dales are covered with grass and low bush, with abundance of fruit-yielding trees.

Habits.—This extraordinary animal, round which have gathered so many myths, derived mostly from the inexact and magnified tales of the natives, still further exaggerated by careless or imaginative visitors to the West Coast of Africa, was first brought to the knowledge of science by Dr. Thomas Savage, an American Medical Missionary, in 1847. From that time downwards numerous preserved specimens of the animal have been received in excellent condition, so that its anatomy is very fully known. In 1860 the first living individual reached Europe, and lived for some months in Wombwell's Menagerie. Since that date both English and continental menageries have had specimens in captivity. What we know of the habits of the Gorilla is greatly based on observations made on these captive animals. Abundant statements to the contrary notwithstanding, very few persons, competent to give an intelligent account of their habits, have ever seen the Gorilla alive in its native state.

Even now, for our best accounts, we are indebted to Dr. Savage, who obtained most of his information from the natives, whose language and character he understood so thoroughly that he was able to extract from them, by carefully sifting their statements, most accurate information free from exaggeration and conjecture.

The Gorillas live in small companies, or rather families, consisting of their young of different ages, along with the father and mother. Like the Orang, the Gorilla is said to build a sort of platform-nest or shelter to pass the night in, of sticks or twigs laid crosswise on the branch of a strong tree, and within about twenty feet from the ground. The male sits, it is said, on guard below, the female and her family occupying the platform above. "My informants," says Savage, "all agree in the assertion that but one adult male is seen in a band." One gets the mastery by killing or driving out the other males.

Professor Hartmann writes: "The Gorillas roam [during the daytime only] through the tracts of the forest, which surround their temporary sleeping-places, in order to seek for food. In walking they place the back of their closed fingers on the ground, or, more rarely, support themselves on the flat palm, while the flat soles of their feet are also in contact with the ground. Their gait is shuffling; the motion of the body, which is never upright as in Man, but bent forward, is somewhat rolling, or from side to side. The arms being longer than those of the Chimpanzee, it does not stoop so much in walking; like that animal it makes progression by thrusting its arms forward, resting its hands on the ground, and then giving its body a half-jumping, half-swinging motion between them. In this act, it is said not to flex the fingers to rest on its knuckles, like the Chimpanzee, but to extend them, making a fulcrum

of the hand. When it assumes the walking posture, to which it is said to be much inclined, it balances its huge body by flexing its arms upward.

The Gorilla has the power of moving the scalp freely forward and backward—as Man in many instances has the power of doing—and, when enraged, of corrugating his brows and erecting the hair over the central bony crest “so as to present an indescribably ferocious aspect.” He is capable of emitting a “terrific yell that resounds far and wide through the forest”; and when shot his cry is like that of a human being in sudden and acute distress. The Gorilla is very ferocious and never runs away, as the Chimpanzee does; he advances to attack his enemies, but according to some observers, however, only when molested, rushing forward in a stooping attitude, then rising to his feet to strike. He is also credited with fighting with his teeth, as well as his hands, biting his antagonist, as the Orangs and the Chimpanzees do. He exhibits great intelligence, though less, perhaps, than the Chimpanzee.

The females prove affectionate mothers, bravely protecting their young at the cost of their own lives. “In a recent case,” writes Dr. Savage, “the mother, when discovered, remained upon the tree with her offspring, watching intently the movements of the hunter. As he took aim, she motioned with her hand, precisely in the manner of a human being, to have him desist and go away. When the wound has not proved instantly fatal, they have been known to stop the flow of blood by pressing with the hand upon the part, and when this did not succeed to apply leaves and grass.”

The food of the Gorilla consists of all sorts of forest and cultivated produce; but the top of the fruiting stem of the oil-palm (*Elais guineensis*), the Papaia (*Carica*), and plantains

appear to be the fruits he most appreciates. Its dexterity in captivity in eating from utensils of civilised life is particularly remarkable, as Dr. Falkenstein records of a Gorilla he had alive for a considerable period. "He took up every cup or glass with instinctive care, clasped the vessel with both hands, and set it down again so softly and carefully that I cannot remember his breaking a single article. . . . He drank by suction, stooping over the vessel without even putting his hands into it or upsetting it, and in the case of smaller vessels he carried them to his mouth. . . . When he was anxious to obtain anything, no child could have expressed its wishes in a more urgent and caressing manner." When he was refused anything he had recourse to cunning, and looked anxiously to see if he was watched, and it was "impossible not to recognise a deliberate plan and careful calculation." When he had done what he had been forbidden or prevented from doing, "his whole behaviour made it clear that he was conscious of transgressing." The Gorilla is said by Dr. Savage to be very filthy in its habits, but Dr. Falkenstein's observations disagree with this statement. On this point the latter says "his cleanliness was remarkable."

The Gorilla generally adopts a squatting position, with its arms folded across its breast. When asleep he lies stretched out at full length on his back or side, with one arm under his head.

The Gorilla is very delicate, and rarely lives long in captivity, even in his own land.

THE CHIMPANZEES. GENUS ANTHROPOPITHECUS.

Anthropopithecus, De Blainville, Leçons Orales (1839).

Troglodytes (nec V.), Geoffr., Ann. Mus., xix., p. 87 (1812).

This genus contains those Apes which stand highest, next to Man, in the animal kingdom. This proximity, however, refers only to his external conformation and his anatomical structure.

The Chimpanzees approach very closely to the Gorilla in structure. Indeed the Gorilla was at first placed in the same genus as the Chimpanzee, which was much earlier known to science than its larger cousin, although an excellent description of the Gorilla, under the name of Pongo, was brought to this country by Andrew Battell, an English prisoner of the Portuguese in Angola, early in the seventeenth century, and published in "Purchas his Pilgrimage," in 1613, a story which for the first time referred definitely to the Chimpanzee.

The body is heavily built, but shorter and less robust than that of the Gorilla. The crown is depressed, and the supra-orbital ridges, from which rise stiff strong eye-brows, are prominent, but not remarkably so. The eye-lids are wrinkled, and their margins set with eye-lashes. The nose, of which the ridge is shorter than in the Gorilla, is depressed in the middle, flatter at the extremity, and, as in the last-named species, is furrowed longitudinally, its nostrils looking more downward and forwards. The lips are extremely mobile and protrusile, the upper one broad and the lower one retreating from the mouth, and not forming a true human-like chin, though it is more prominent than in the Orang. The cheeks are more wrinkled than in that Ape. The ears are large and projecting from the side of the head, and often carry a lobule. They are strangely like those of Man, and, as Mr. Darwin has remarked, the Chimpanzee never moves or erects its ears, so that they are equally rudimentary, as far as that function is concerned, as in Man. The shoulders and chest are broad, and indicate great strength. Their lower limbs are longer in proportion than in the Orang.

The foot, which is anatomically in no respect a hand, is sometimes shorter than the latter, the great-toe is thick, opposable, and thumb-like, the other four toes are united together by a web, the heel is somewhat developed, and the whole of the sole of the foot is applied to the ground when walking. The arms, of which the humeral segment is about equal in length to the fore-arm, are long, but reach only a little below the knee—their span being about a half more than the height of the body. The hands, which are wonderfully human in form, are broad, comparatively short, and less hook-like than in the Orang. The hair on the arm and fore-arm converges towards the elbow, as in the Gorilla and Orang. The thumb is short in comparison with the same digit in Man, and, as in the human hand, the middle finger is the longest; the outer four fingers being united by a web reaching up to the first joint. The palm of the hand can be applied flat to the ground; but though the Chimpanzees can stand or run erect on the flat sole of the foot, they prefer to advance leaning forward, supporting themselves on the knuckles of the hand. They have no callosities on the ischiatic bones, on which they sit.

The female Chimpanzees are slightly smaller than the males, but the disparity between them is much less than between the two sexes of the Gorilla. The nose and teeth are less prominent, and the belly is more tun-shaped. The young males also exhibit fewer differences from the adult than among the Gorillas, though differing in many points of their soft anatomy and osteology. The nose lengthens, and its extremity widens, while the face becomes more prognathous with increasing years. In the young the frontal bone is low and flat. The skull in the Chimpanzee is elongated, and small in proportion to the body; the forehead is smaller, the crown more rounded than

in the Gorilla, and the back of the head convex.* The central (sagittal) crest, so strongly developed in the Gorilla and the Orang, is here wanting; the supra-orbital ridges which extend across the face, and the occipital prominences for the back-muscles, though large, are also less marked. The orbits have a circular rim, and are less prominent than in the Gibbons. The nasal bones are but slightly arched, and the openings for the nostrils round and small. The jaws, which are smaller, proportionately to the cranium, in this genus, than in any other of the *Simiidae*, protrude far forward, but the symphysis of the lower jaw is smaller than in the Gorilla, and its two halves low and wide. The bones of the skull are much hollowed out into cavities (sinuses) in the forehead, nose, and jaws, all of which communicate with each other. The plane of the *foramen magnum* (for the passage of the spinal cord) is oblique to the plane of the base of the skull.

The volume of the cranium is from twenty-six to twenty-seven cubic inches, or about one-half of the lowest capacity of a normal human cranium. A styloid process is more or less distinctly visible in the Chimpanzees.

The canine teeth are long and conical, but less than in the Gorilla; and the diastema, or gap, between them and their neighbouring teeth is smaller than in the other Apes. The molar teeth are four-cusped, and have the oblique ridge already described extending from the front inner to the hind outer cusp; and the middle lower molar has five cusps, both these dental characters being similar to those in Man. The anterior lower pre-molar, however, is pointed, and has a long sharp anterior edge, as in the *Cercopithecidae*.

* The deformity known in the human skull as acrocephaly, which occurs in all races of men, and is due to the too early ossification of certain of its sutures, has been found in the Chimpanzee.

The vertebral column begins to show the S-shaped flexure, characteristic of Man's back-bone; it presents also a human character in the form of its second neck vertebrae, and there are thirteen pairs of ribs, as in Man. The hind-most vertebrae "give the impression of a rudimentary tail." (*Hartmann.*)

The humerus is nearly equal in length to the fore-arm; the wrist (*carpus*) has only eight bones (the central bone being absent), agreeing, therefore, with the number in Man.

All the ridges and grooves seen in the human brain are present in that of the Chimpanzee, but "they are simpler and more symmetrical, and larger in proportion to the brain." (*Huxley.*) The cerebellum, and the nerves also, are larger in proportion to the cerebrum than in Man; and certain structures (the *corpora trapezoidea*) which exist in the brains in the lower Mammalia are absent. These prominences, which are situated in that portion of the brain known as the *medulla oblongata*, at the summit of the spinal cord, disappear, as we have seen, in all the genera of higher rank than the *Cebidæ*, one of the lowest families of the *Anthropoidea*. The brain in its convolutions and in many other respects conforms to that of the Orang. This is especially the case in *A. calvus*.

The uvula, which is absent in the throat of the Orang, is pendulous in the Chimpanzees, as in Man. Large air-sacs are also present, and the hyoid bone is excavated posteriorly, suggesting the conformation of the same bone in *Alouatta* (the South American Howlers). The stomach is very similar to that of Man, and so are the digestive and reproductive organs. The round ligament, attaching the head of the thigh-bone into its pelvic socket, is present, and restricts the flexibility of the hind-limb of the Chimpanzees, compared with that of

the Orang. Its presence, however, while acting somewhat less favourably in regard to the climbing capacities of these animals, whose habits are less essentially arboreal than the Orangs', beneficially assists them in walking, affording them a firmer support on the ground. In the Chimpanzee there is always a semi-lunar fold (*plica semilunaris*) in the inner corner of the eye, corresponding to the nictitating membrane (or third eyelid) of birds. In some of the Lemuroids it is well developed (*suprà*, vol. i., p. 90), and is large in some races of men.

The Chimpanzee is confined to the West African Sub-region, as defined by Dr. Bowdler Sharpe. It is known from Loango, along the banks of the Upper Congo, and Mr. Monteiro (P. Z. S., 1871, p. 544) says it is quite unknown to the south of the Congo; it also occurs throughout the country of the Man-yema, in Central Africa, where Livingstone describes it under the name of Soko; and southward as far as 10° south latitude, to Lake Moero. Schweinfurth has recorded it from the Niam-niam country.

The Chimpanzees inhabit forest regions, and feed on wild fruits in the woods, and the products of cultivated gardens, not rejecting, when they can capture it, animal food. They live in separate families, or in limited communities of small families mixed together, but each male lives with his own single female. They are more arboreal than the Gorilla, but much less so than the Orangs. In many districts they seem to live on the ground.

They emit loud cries, shrieks, and howls in the morning and evening, and often during the night. "Since they are really accomplished in the art of bringing forth these unpleasant sounds, which may be heard at a great distance, and are reproduced by the echoes, it is impossible to estimate the number

of those who take part in the dreary noise, but often we seemed to hear more than a hundred." (*Pechuel-Lösche*.) These Apes also build resting-places, not far from the ground, like the Orangs, composed of twigs and sticks on the branch of a tree or a crotch, in which the female and her young take refuge for the night, the male placing himself on guard beneath.

They seldom make an unprovoked attack on the natives wandering in the forest; on the contrary, they are peaceably disposed animals, glad to get out of the way of danger or possible enemies. Yet, when pressed, they form no mean antagonist. Biting is their principal mode of defence.

"As seen here," says Savage, "they cannot be called gregarious, seldom more than five or ten at most being found together. It has been said on good authority, that they occasionally assemble in large numbers in gambols. My informant asserts that he saw once not less than fifty so engaged, hooting, screaming, and drumming with sticks upon old logs, which is done in the latter case with equal facility by the four extremities. . . . When at rest, the sitting posture is that generally assumed. They are sometimes seen standing or walking, but when thus detected, they immediately take to all fours, and flee from the presence of the observer. Such is their organisation that they cannot stand erect, but lean forward. Hence they are seen, when standing, with the hands clasped over the occiput, or the lumbar region, which would seem necessary for balance or ease of posture."

Most of the accounts of the habits we have of Chimpanzees, refer to those of young individuals kept in captivity. There is still much to be discovered as to the ways and modes of life of the adults of both the Chimpanzee and the Gorilla. They are both very delicate, and in temperate climates rarely live

more than a few months; a Bald Chimpanzee (*A. calvus*), however, survived five years in the Zoological Gardens, in London.

I. THE COMMON CHIMPANZEE. ANTHROPOPITHECUS

TROGLODYTES.

Homo sylvestris (Ourang-outang), Tyson & Cowper, Phil. Trans., xxi., p. 338 (1699); Tulpius, Observ. Anat., p. 270, pl. 14 (1641).

Homo troglodytes, Linn., Syst. Nat., i., p. 32 (1766; pt.).

Simia troglodytes, Gm., Syst. Nat., p. 26 (1788); Blumenb., Handb., x., p. 73 (1803); Owen, Tr. Z. S. I., p. 344, pls. 48, 50-52, 55, 56 (1835); ii., p. 169 (1841); Schl., Mus. Pays-Bas, vii., p. 8 (1876).

Troglodytes niger, Geoffr., Ann. Mus., xix., p. 87 (1812); Desmar., Mammolog., p. 49 (1820); Lesson, Spec. Mamm., p. 37 (1840); var. *Marungensis*, Owen, Tr. Z. S., v., p. 3, pls. i-ix.; p. 279, pl. xlix. (1866); Noalk, Zool. Jahrb., ii., p. 291 (1887).

Pseudanthropos (Troglodytes) leucoprymnus, Less., Ill., Prod. Syst. Mamm., pl. 12 (1811); Reichenb., Naturg. Affen., p. 191 (1862).

Pithecus leucopryma, Less., Ill. Zool., pl. 31 (1836; young).

Satyrus lagaros, Meyen, Arch. f. Naturg., p. 282 (1856).

Mimetes troglodytes, Gray, Cat. Monkeys Brit. Mus., p. 6 (1870).

Troglodytes vellerosus, Gray, P. Z. S., 1862, p. 181; id., Cat. Monkeys Brit. Mus., Append., p. 127.

Troglodytes schweinfurthi, Gigl., Studii Craniol. sui Cimpanzé iii., p. 56 (1872).

Troglodytes aubryi, Grat. et Alix, Nouv. Arch. Mus., ii., p. 1, pls. 1, 9 (1866).

Troglodytes tchego, Duvernoy, Arch. Mus., viii., p. 8 (1855).

Anthropopithecus troglodytes, Flower & Lydekker, Mamm., p. 736, fig. 357 (1891).

Characters.—Face, ears, hands, and feet dark-reddish flesh-colour, or more rarely of a blackish-brown colour; in general the colour of the hair is wholly black, except on the upper and lower lips, where it is white and very short, and in the region of the buttocks, where it is washed with reddish-brown.

Hair on the body straight and silky, with coarser hair interspersed; on the top of the head it lies smoothly to each side, away from a median line; round the face it forms bushy whiskers, extending down into a slight beard; it encroaches on the brow, leaving only a triangular central space naked; on the upper and lower lips are short, bristly hairs; the rest of the face naked and much wrinkled; on the shoulders, the back, and the hips, the hair is longer than elsewhere; the back of the hands and feet are thinly haired, the fingers and toes nude. The margin of the ears is often folded in for the greater part of its length.

The skin of the body is of a peculiar light, yet muddy, flesh-colour, sometimes verging on brown. Brownish or black spots on many parts of the body seem to vary in different individuals.

The expression of the face is grave, but less melancholy and pre-occupied than in the Orangs.

The weight of the brain in *A. troglodytes* varies from $6\frac{1}{2}$ to $6\frac{3}{5}$ ounces.

This celebrated Man-like Ape has been known, by vague report at least, for nearly three hundred years. The earliest clear account of its existence, however, is derived from the "Strange

Adventures of Andrew Battell, of Leigh in Essex, sent by the Portugals prisoner to Angola, who lived there and in the adjoining regions neere eighteene yeares." It was first published in 1613 in "Purchas his Pilgrimage," and later more fully in 1625, in "Purchas his Pilgrimes."* Here it is related that in the Province of Mayombe, "which is nineteen leagues from Longo along the Coast, the woods are so covered with baboones, monkees, apes, and parrots that it will fear any man to travaile in them alone. Here are also two kinds of monsters, which are common in these woods, and very dangerous. The greatest of these two monsters is called Pongo, in their language, and the lesser is called Engeco." The Pongo turned out to be the Gorilla, the description given by the old prisoner Battell proving to be wonderfully accurate. The lesser monster, the Engeco, is equally certainly the Chimpanzee. The first record of a specimen actually seen in Europe is in 1641, and is noticed by Tulpius in his "Medical Observations," and the earliest scientific description of a Chimpanzee—a young specimen of *A. troglodytes*—is that of the anatomists Tyson and Cowper, published by the Royal Society in 1699. It was, however, not till 1835, that the osteology of a full-grown specimen was described, when Sir Richard Owen's memoir appeared, and shortly after a very detailed account of its habits was given to the world by Dr. Thomas Savage, the missionary to whom we have already referred (p. 184), followed by a further anatomical investigation of its structure by Dr. Wyman, of Boston, U.S.A.

Distribution.—This species is found over the greater part of Tropical Central Africa, and its range is co-extensive with that given above for the genus. Loango and the Gaboon, however,

* Huxley's "Natural History of the Man-like Apes," p. 5.

are the districts from which this Chimpanzee has chiefly been imported into Europe.

Habits.—The more characteristic habits of the common Chimpanzee have already been given under the description of the genus.

Its food consists of all sorts of forest fruits, and especially of the young shoots of the *Scitamineæ*, or ginger-plants.

The Chimpanzee can move the skin of its head, as the Gorilla does, but without causing the erection of the hair, which the Orang and the Gorilla are both able to accomplish. It can also to some considerable extent wrinkle its forehead, if disappointed or pleased, as when refused anything, or if tickled, when in the latter case it also utters a chuckling sound like that of smothered laughter, draws back the corners of its mouth, and wrinkles its eyelids.

The *Soko* observed by Livingstone in the Manuyema country would seem to be the common Chimpanzee. "According to Livingstone," to quote Mr. H. H. Johnston's note in his excellent "Life" of the great traveller, "these creatures often walk in an erect position, but steady their bodies by placing the hands on the back of the head. He represents this beast as being of great intelligence, and so cunning, that it is difficult to stalk him in front without being seen, and, therefore, when he is killed, it is usually from behind. The Manuyema people frequently string a number of nets round some enclosure in the forest and drive the *Sokos* into them and spear them. Brought to bay like this, they will frequently turn on their assailants, and will snatch their spears from them, and break them, and perhaps also bite off the ends of the men's fingers." But, as a rule, the *Soko* is not ferocious. They are said to kidnap children and

run up the trees with them, and have to be lured down by bananas. When wounded the creature tries to staunch the blood by stuffing leaves into the wound. It lives in communities of about ten, and is monogamous. The female produces occasionally twins. As parents, they are very affectionate towards their offspring, the father relieving the mother of the burden of her young one in dangerous places. Their food consists of wild fruits. At times the *Sokos* collect together and drum with their fists on the trunks of hollow trees, and accompany this performance with loud yells and screams."

"According to the statements of the Niam-niam themselves," says Schweinfurth, "the chase of the Chimpanzee requires a party of twenty or thirty resolute hunters, who have to ascend the trees, which are some eighty feet high, and to clamber after the agile and crafty brutes until they can drive them into the snares prepared beforehand. Once entangled in a net the beasts are without much further difficulty killed by means of spears. However, in some cases, they will defend themselves savagely and with all the fury of despair. Driven by the hunter into a corner, they are said to wrest the lances from the men's hands and to make good use of them against the adversary. Nothing was more to be dreaded than being bitten by their tremendous fangs." The stories as to their carrying off young girls, and constructing nests are pure fabrications, according to Schweinfurth. Its name among the Niam-niam is "Ranya." "The life which the Ranya leads is very much like what is led by the Orang-Utan in Borneo, and is spent almost entirely in the trees, the woods on the river banks being the chief resort of the animals. . . . Like the Gorillas, they are not found in herds, but either in pairs, or even quite alone, and it is only the young which occasionally may be seen in groups."



THE BALD CHIMPANZEE.

II. THE BALD CHIMPANZEE. ANTHROPOPITHECUS CALVUS.

Troglodytes calvus, Du Chaillu, Pr. Bost. Soc. Nat. Hist., vii., p. 296 (1861); id., Travels, pp. 32, 48, 63 (1861); Gray, P. Z. S., 1861, p. 273; Bartlett, P. Z. S., 1885, p. 673, pl. xli.; Beddard, Tr. Z. S., xiii., p. 177 (1893); Romanes, P. Z. S., 1889, p. 316.

Troglodytes kooloo-kamba, Du Chaillu, Pr. Bost. Soc. Nat. Hist., vii., p. 358 (1861); id., Travels, pp. 39, 49, 50 (1861); Gray, P. Z. S., 1861, p. 273.

Mimetes troglodytes, var. a (*T. calvus*), Gray, Cat. Monkeys Brit. Mus., p. 6 (1870).

Anthropopithecus calvus, Flower & Lydekker, Mammals, p. 736 (1891).

(Plate XLI.)

Characters.—This species was first indicated by Du Chaillu on his return from his celebrated journey to the Gaboon, but based on poor skins, which left much doubt as to the species being distinct. Excellently preserved specimens were, however, brought home by Marche and Dr. Compiègne, and some of them passed into the Dublin Museum, but it was not till 1885, when a living specimen, now known to fame as “Sally,” was received at the Zoological Gardens in London, and lived there for five years, that the correctness of Du Chaillu, as to the distinctness of his “Kooloo-kamba,” *A. calvus*, from *A. troglodytes*, was proved and accepted.

Similar to *A. troglodytes*, but distinguished from it by the face, hands, and feet being quite black, or brownish-black, instead of pale flesh-colour; the front, top, and sides of the head and face are nearly naked, having only a few short hairs on the head, which is quite destitute of any signs of the parting so con-

spicuous in *A. troglodytes*. The hair is blacker than in the latter species, and extends only for a short distance in front of the level of the ears, and on the sides of the face; the temporal region and cheeks show a scanty growth; on the chin and upper lip a sparse crop of short hairs, chiefly white; long scattered black eyebrows, which do not meet in the mid-line, spring from the supra-orbital ridges. The ears are as large as in *A. troglodytes*, very flat, but stand out more prominently from the side of the head; their margin is nude, and there is no lobule. The hands are haired across the knuckles, and again (after a naked band) on the back of the hand and arm; the foot is haired down to the first joints of the toes; the nails and fingers are very human in appearance.

Face very prognathous; the nasal bones ridged in the mid-line; the foot less like a human hand than even in the Orang. "Sally's" brain weighed $8\frac{3}{5}$ ounces.

The expression of the face, the expanded nostrils, the thicker lips, especially the lower lip, and the more elevated skull, all distinguish *A. calvus* from *A. troglodytes*; in its muscular anatomy and in its brain it also shows points of difference.

Distribution.—The interior of Gaboon, in Western Africa.

Habits.—The Bald Chimpanzee showed in captivity a disposition to live on animal food, which the Common Chimpanzee never does. "Sally" had also the singular habit of producing pellets, resembling the castings thrown up by Raptorial birds; they were composed of feathers (of the birds she had eaten) and other indigestible substances taken with her food. Moreover, "Sally," as this Chimpanzee, now famous in the annals of zoology, was named, was an expert rat-catcher, and caught and killed many rats that entered her cage. "Her intelligence was

far above that of the ordinary Chimpanzee. With but little trouble she could be taught to do many things that require the exercise of considerable thought and understanding." (*Bartlett.*) In general habits *A. calvus* differs, so far as known, in no respect from *A. troglodytes*.

It was on this Ape that the late Dr. G. J. Romanes, attracted by its high intelligence, made his interesting psychological experiments, which are related in the Proceedings of the Zoological Society for 1889. "Her intelligence was conspicuously displayed by the remarkable degree in which she was able to understand the meaning of spoken language—a degree fully equal to that presented by an infant a few months before emerging from infancy, and, therefore, higher than that which is presented by any brute, so far at least as I have met with any evidence to show. Having enlisted the intelligent co-operation of the keepers, I requested them to ask the Ape repeatedly for one straw, two straws, or three straws. These she was to pick up and hand out from among the litter of her cage. No constant order was to be observed in making these requests, but whenever she handed a number not asked for, her offer was to be refused, while if she gave the proper number her offer was to be accepted, and she was to receive a piece of fruit as payment. In this way the Ape was eventually taught to associate these three numbers with their names. . . . As soon as the animal understood what was required, and had learnt to associate these three numbers with their names, she never failed to give the number of straws asked for. Her education was then extended in a similar manner from three to four and four to five straws." "Sally" rarely made mistakes up to that number, but above five and up to ten, to which one of the keepers endeavoured to advance her education, the result is uncertain.

"It is evident that she understands the words seven, eight, nine, and ten, to betoken numbers higher than those below them, and when she was asked for any of these numbers above six, she always gave some number over six and under ten. She sometimes doubled over a straw to make it present two ends, and was supposed to hasten, with the small stock of patience she possessed, the attainment of her task." Dr. Romanes was disposed to think that the uncertainty which attended her dealing with the numbers six and seven was due to her losing patience rather than to her losing count. It was at all events evident that "Sally" could count accurately up to five. Dr. Romanes tried to teach her colours in the same way, but the result was so uniformly negative that he was disposed to think that she was colour-blind, as she was taught to distinguish between white straws and the straws of any other colour, but she could not be taught to go further.

In 1875 a female Ape, which received the name of "Mafuca," was received from the Loango coast at the Dresden Zoological Gardens. "This," says Dr. Hartmann, "was a wild unmanageable creature, 120 cm. in height, reminding us in many respects of the Gorilla. The face was prognathous [more so than in *A. troglodytes*]; the ears were comparatively small, placed high on the skull, and projecting outwards; the supra-orbital arch was strongly developed, and the end of the nose was broad, and there were rolls of fat on the cheeks. The creature was, moreover, strongly built, and the region of the hips and the belly was contracted, while the hands and feet were large and powerful. The general physiognomical resemblance between Mafuca and a female Gorilla [whose dead body I had examined] was very great." It was suggested that the creature might be a cross between a Chimpanzee and a Gorilla, as the traveller

Koppenfels had affirmed he had shot such cross-bred animals. It is still an undecided question to what species it belonged.

Of the four genera of the *Simiidæ*, "the Gibbons are obviously most remote from Man, and nearest to the *Cynopithecini* (*Cercopithecidæ*).

"The Orangs come nearest to Man in the number of the ribs, the form of the cerebral hemispheres, the diminution of the occipito-temporal sulcus [groove] of the brain, and the ossified styloid process; but they differ from him much more widely in other respects, and especially in the limbs, than the Gorilla and the Chimpanzee do.

"The Gorilla is more Man-like in the proportions of the leg to the body, and of the foot to the hand; further, in the size of the heel, the curvature of the spine, the form of the pelvis, and the absolute capacity of the cranium.

"The Chimpanzee approaches Man most closely in the character of its cranium, its dentition, and the proportional size of the arms." (*Huxley*.)

THE HUMAN RACE. FAMILY HOMINIDÆ.

With this family we reach the culminating point of the zoological tree. It contains but one monotypic genus, *HOMO*, with its single species, *HOMO SAPIENS*. Although deriving his specific designation from the unique characteristic of his mental attributes, Man comes under review here alone in his physical aspect as one of the mammalian animals.

"Identical in the physical processes by which he originates—identical in the early stages of his formation—identical in the mode of his nutrition before and after birth, with the animals which lie immediately below him on the

scale—Man, if his adult and perfect stature be compared with theirs, exhibits, as might be expected, a marvellous likeness of organisation. He resembles them as they resemble one another—he differs from them as they differ from one another.” (*Huxley*.) On comparing his external form and internal organisation with that of all the other known zoological forms, he is found to fit no niche in the scale of classification, founded on the same principles of likeness and dissimilitude as applied to them, except in the vicinity of the Gibbons, the Orangs, the Gorillas, and the Chimpanzees, of whose order—the Primates—he forms only an additional though higher Family, solely on his structural characters and entirely apart from those intangible mental attributes which remove him supremely above all other creatures. Unbridged as is the chasm between the Ape and Man, “the structural differences which separate Man from the Gorilla and the Chimpanzee, are not so great as those which separate the greater from the lower Apes.” (*Huxley*.)

Of the three higher Apes, the Chimpanzees are those which appear to approach Man most closely ; but he is distinguished from them and from all the other members of the *Simiidae* by his body being supported in the erect position upon the outer edge of a broad, arched, short-toed foot, articulated at right angles to the leg. This foot has a prominent heel and a stout great-toe, longer than all the digits, except the second, but lying parallel and not opposable to them, or capable of being moved away from them, because of the flat unrounded articular surface of the ento-cuneiform bone of the ankle. His back-bone has a strongly-marked, open S-shaped curvature, with its concavity in the lower back, giving it its elasticity and breaking any shock which might be transmitted otherwise to the brain through the jolt of walking in the vertical position. His arms are proportion-

ately much shorter than the legs, and also the spine ; the thumb is also longer in proportion than in the Apes, and, as the fingers have all separate movements, the hand is thus better able to be adjusted to minute operations. The head in Man is equi-poised on the vertebral column just under the centre of its mass, and is thus easily supported and moved, whereas, in all lower forms of Vertebrates, it is placed further and further from the centre towards the back, with its weight thrown towards the front. In Man the skull cavity, not intruded upon and diminished by the roof of the orbits, is characteristically high and arched, its capacity being twice as great as any Ape's ; still the difference in the cranial capacity of different races of Man is much greater absolutely than that between the highest Ape and the lowest Man. (*Huxley*.) His facial and jaw-bones are smaller, and project far less, even in the most prognathous of men, than in the Apes ; the lower front margin of the under jaw is characteristically human, being produced forward to form the chin. In the human skull there is always a spike-like bone—the styloid process—dependent from and ossified to the ear-bones.

In Man the form of the pelvis—the large osseous block to which the legs are articulated—is very characteristic in its width ; its great basin-shaped cavity receives and supports his lower internal organs ; to its extensive external surface the muscles for enabling him to retain the erect position are attached, while its width, by separating the thigh-bones, gives to the body a form favourable to stability, which is increased by the wide angle at which the articulating head of the femur is attached to its shaft. “ Were he to desire it, Man could not, with convenience, walk on all fours : his short and nearly inflexible foot, and his long thigh, would bring the knee to the ground ; his widely separated shoulders and his arms, too far

extended from the median line, would ill support the fore-part of his body ; the great indented muscle which, in quadrupeds, suspends the trunk between the blade-bones as a girth, is smaller in Man than in any one among them ; the head is heavier, on account of the magnitude of the brain, and the smallness of the sinuses or cavities of its bones ; and yet the means of supporting it are weaker, for he has neither cervical ligament, nor are the vertebræ so modified as to prevent their flexure forward ; he could, therefore, only maintain his head in the same line with the spine, and then, his eyes and mouth being directed towards the ground, he could not see before him." (*Cuvier*.)

The breadth of the sacrum is equal to or exceeds its length, and the width of the pelvis exceeds its height, the reverse of what is seen in Apes. The wrist (*carpus*) in Man has no *central bone* ; the ankle (*tarsus*) is longer than the metatarsal segment, and that is again longer than the toe-bones, which are more compressed than the finger-bones. In Man the teeth form a continuous series—there is no diastema, which, with the exception of the extinct *Anoplotherium*, is alone true of Man ; his canine teeth are never prominent or tusk-like.

The human brain differs from that of the Man-like Apes in regard to its convolutions and their separating grooves, only in minor characters ; but in weight, as in capacity, very greatly. The weight of a healthy full-grown human brain never descends below thirty-two ounces, that of the largest Gorilla, far heavier than any Man, never attains to more than twenty. Yet, "the difference in weight of brain between the highest and the lowest Men is far greater relatively and absolutely than between the lowest Man and the highest Ape." (*Huxley*.)

Notwithstanding the enormous differences presented between

the highest and lowest races of mankind, and widely as they are separated geographically, these dissimilar characters are not considered sufficient to constitute more than one species, since throughout the series one form graduates into another, and all of them are fertile with each other. Although there is but one species of Man, he is distinguishable, however, according to Sir William Flower, into three main races.

A. *The Ethiopian Race.*

Under this heading are included all the dark-skinned negroes, with black frizzly hair, long heads (*i.e.*, whose breadth is less than four-fifths of its length), moderately broad faces, flat nasal bones, prominent legs, thick everted lips, protruding jaws, and long fore-arms. To this race belong (1) the Negroes, inhabiting Central Africa, of which there are numerous tribes: (*a*) the yellowish-brown Hottentots of the South African plains, and (*b*) the dwarfed straight-faced Bushmen, living outcast among the mountains and rocks, remarkable for their tufted hair, their great fatty buttocks, and the peculiar "click" in their speech; (2) the *Negrillos*, of Central and West Africa, with short heads (*i.e.*, whose breadth is greater than four-fifths of its length); (3) the *Melanesians*, composed of the Papuans of New Guinea, New Caledonia, and the Solomon Islands, with strong supra-orbital ridges, and a narrow and prominent nose: the "hyper-typical" mountaineers of Fiji, the Tasmanians, and the Australians, especially of the northern portion of that continent, all belong to this race; (4) the round-headed *Negritos* of the Andamans, the Philippines, and the Malay Archipelago.

B. *The Mongolian Race.*

These are short in stature, have the skin yellow or brown, the hair black and straight, abundant on the head, but sparse

elsewhere; the skull low and intermediate between long and broad; the face broad, flat, and with large cheek-bones; the eye-sockets high and round. To this stock belong (1) the Eskimo of Greenland and all the sub-arctic regions of Eurasia and N. America; (2) the Mongols, of whom the Japanese, the nomad Lapps, the Finns, both of mixed Caucasian and Mongol blood, and those descendants of the Mongols, the Magyars and the Turks, form a northern and much modified group, while the Chinese, the Thibetans, the Burmese, and the Siamese constitute a southern, more civilised, group; (3) the Malays of the Malayan Peninsula and Sumatra, in which the Mongolian features are very apparent; (4) the Brown Polynesians, inhabiting Samoa, Tonga, the Eastern Polynesian islands, and New Zealand; (5) the native American races inhabiting the continent from Terra del Fuego in the south, to the sub-arctic regions occupied by the Esquimo.

c. *The Caucasian Race.*

Of this stock there are two very distinct groups: (1) the tall, blond, straight, fair-haired, blue-eyed, light-skinned, well-bearded peoples of N. Europe, Scandinavia, Scotland, N. Germany—named *Xanthochroi* ("yellow-haired" and pale of complexion) by Huxley: these have extended, as a mixed race, also into N. Africa and Afghanistan; and by intermingling with the Mongols have produced the Finns and the Lapps; and (2) the *Melanochroi* ("black-haired") people, shorter in stature, with long heads, pale skins, prominent noses, but with black wavy hair and beards and dark eyes, who inhabit S. Europe, N. Africa, and S.W. Asia, and are found also in the British islands. They are known as Kelts, Iberians, Romans, Pelasgians and Semites. The Dravidians of India, the Veddahs

of Ceylon, and probably the Ainos of Japan and the Maoutze of China belong to the Caucasian stock. The ancient Egyptians, of whom the Kopts and the Fellahs of Egypt of to-day are the descendants, are pure *Melanochoi*. (*Flower*.)

EXTINCT ANTHROPOIDEA.

As we have seen above (vol. i., p. 110) the earliest Lemuroids appeared in the Lower Eocene division of the Tertiary period in the New World, and in the Old World in its upper strata ; they continued during the whole of the Eocene in the Western Hemisphere, and are last seen in the Lower Miocene of North America.

Fossil Apes, on the other hand, appear first in South America, in the Santa Cruz beds of Patagonia, in strata of Upper Eocene or Oligocene age. In the Old World they come on the scene only during the tropical ages of the Miocene epoch. When the middle and upper strata of the latter period were being deposited in Europe, Anthropoid Apes ranged from the Mediterranean shores to further north than the present northern limit of the Old World Apes.

In the Pliocene age *Anthropoidea* were living in Southern Asia, around where the Sivalik hills now stand, and in Southern Europe, as at Pikermi and Samos, being represented almost entirely by species of still existing genera, and one living species—the Orang. Chimpanzees had already then become differentiated, and perhaps Man had even appeared, though the evidence is not sufficiently conclusive.

In the Pleistocene, remains of many still living species have been brought to light both in the New and the Old Worlds, and unmistakable osseous remains, as well as abundant evidences

of his handiwork, prove the existence of Man at that remote epoch.

FAMILY HAPALIDÆ (Vol. I., p. 103).

GENUS HAPALE (*op. cit.*, p. 104).

Of this genus abundant remains of two species have been found in many of the Brazilian caverns of Pleistocene or recent age. These have been referred to two species: HAPALE GRANDIS (Lund), and the still-living H. JACCHUS (Linn.; cf. Vol. I., p. 105).

FAMILY CEBIDÆ (Vol. I., p. 114).

GENUS PROTOPITHECUS.

Protopithecus, Lund, Ann. Sc. Nat. (2), xi., p. 230 (1839); Zittel, Handb. Palæont., iv., p. 705 (1893).

This genus is founded on a very large leg-bone from the Pleistocene bone-caves of Brazil. The species has been described as PROTOPITHECUS BRASILIENSIS, Lund.

GENUS CALLITHRIX (Vol. I., p. 158).

Two species have been described from the Pleistocene bone-caves of Brazil: CALLITHRIX CHLOROCNOMYS, Lund, and C. PRIMÆVA, Lund (= *C. antiqua*, Lund).

GENUS ALOUATTA (Vol. I., p. 192).

Remains of one species, ALOUATTA URSINA (p. 149), has been discovered in the Pleistocene bone-caves of Brazil.

GENUS CEBUS (Vol. I., p. 204).

The Pleistocene bone-caverns of Brazil have preserved three species: one extinct, CEBUS MACROGNATHUS, Lund, and two still living, C. FATUELLUS, Linn., and C. CIRRIFER, Geoffr.

GENUS HOMUNCULUS.

Homunculus, Ameghino, Rev. Argent. Hist. Nat., i., pp. 290, 384 (1891).

Ecphantodon, Mercenat, Rev. Mus. La Plata, ii., p. 74, pl. ii.; Zittel, Handb. Palæont., iv., p. 704 (1893).

The dental formula of this genus is $I_{\frac{2}{2}}$, $C_{\frac{1}{1}}$, $P_{\frac{3}{3}}$, $M_{\frac{3}{3}}$. The diastema, or break, in the dental series is very small; the incisors are chisel-shaped, the outer pair smaller than the inner pair. The canines, which have a small basal cusp behind, are only slightly prominent; the pre-molars have one root, and one low outer cusp, and two higher inner cusps. The molars are quadrangular, with two pairs of cusps, each united obliquely by a ridge; the anterior molar is smaller than the two hinder. The arm-bone (*humerus*) has an ent-epi-condylar foramen. (*Zittel*.) The front surface of the line of union of the two halves of the lower jaw is vertical. The terminal joints of the digits have nails. The thumb and the great-toe are opposable. HOMUNCULUS PATAGONICUS, Ameghino (= *Ecphantodon ceboides*, Mercenat), the only known species, is found in the Upper Eocene or Oligocene of Santa Cruz, Patagonia.

GENUS ANTHROPOPS.

Anthropops, Ameghino, Rev. Arg. Nat. Hist., i., p. 387 (1891); Zittel, Handb. Palæont., iv., p. 704 (1893).

This genus is known from only a fragment of a lower jaw containing four small incisors, two strong canines, and anterior and median pre-molars, both one-rooted. One species, ANTHROPOPS PERFECTUS, Ameghino, from the older Tertiary (Upper Eocene or Oligocene) beds of Santa Cruz, Patagonia, is known.

Two genera, *Homocentrus* (H. ARGENTINUS, Amegh.) and

Eudiastus (E. LINGULATUS, Amegh.), described by Ameghino, from the Santa Cruz beds in Patagonia, are not yet sufficiently characterised.

FAMILY CERCOPITHECIDÆ (Vol. I., p. 248).

GENUS PAPIO (*suprà*, p. 253).

Several species of this still living genus have been recovered from strata of the Tertiary epoch: PAPIO SUB-HIMALAYANUS (Meyer), from the Sivalik hills, of Lower Pliocene age; P. FALCONERI (Lydekker), from the Pleistocene bone-caves of Madras, India, and in the superficial deposits of Algeria, North Africa; and P. ATLANTICUS (Thomas).

The Sivalik species was closely related to the existing North-African Baboons.

GENUS OREOPITHECUS.

Oreopithecus, Gervais, C. R., p. 1223, lxxiv. (1872); Ristori, Boll. Com. Geol. (3), i., pp. 178, 226, pls. vii., viii. (1890); Zittel, Handb. Palæont., iv., p. 705 (1893).

The characters which distinguish this genus are the incisors, which are chisel-shaped above and scoop-shaped below; the large upper and lower canine teeth; the upper pre-molars, which approach in shape to the molars, with the outer cusps higher than the inner, and the inner one strong; the upper molars with two pairs of opposite conical cusps, separated by a longitudinal furrow, and with a strong cingulum; the posterior upper molar smaller than the median; the lower molars smaller than the upper, with two pairs of cusps, and a fifth on their hind border, which in the hindmost tooth is developed into a strong talon. The face is short, and the chin rounded. OREOPITHECUS BAMBOLII, Gervais, is the best known species, and was obtained from the Mid-Miocene lignites of Monte Bamboli,

Casteani, and Monte Massi, in Tuscany. It has been placed by some Palæontologists among the *Simiidæ*, and by others in the *Cercopithecidæ*. According to Ristori, the under jaw shows its alliance with *Papio* and *Cercopithecus*; while the upper jaw more resembles the Anthropoid Apes. It is the largest known fossil Ape, and is excelled in strength only by *Dryopithecus*, Zittel.

GENUS MACACUS (*suprà*, p. 1).

Species belonging to this still living genus, occurred in Asia and in Europe in the age—the Pliocene—which immediately preceded the Great Ice age, as well as in the Pleistocene epoch itself. *MACACUS SIVALENSIS* is the oldest fossil of the genus, and was described by Mr. Lydekker from the Sivalik beds of the Punjab. *M. PRISCUS* is known from the Pliocene of Montpellier, in France; *M. FLORENTINUS*, Cocchi (the same as *Aulaxinus florentinus* of Cocchi, and *M. ausonianus* of Forsyth Major), from the Upper Pliocene beds in the valley of the Arno. *M. SUEVICUS* (Hedinger), which has been described from a well-preserved palate-bone, having all the molar, and two of the pre-molar teeth present, was found at Heppenheim, in Würtemberg. *M. TRARENSIS* (Pomel) is found in Algeria, in beds of the Ice age; while, in holes on the rock of Gibraltar, remains of the same species as is now living there—*M. inuus*—were discovered by Mr. Calderon in 1879. From another crevasse at Monstaines, in the Haute Garonne, M. Harlé obtained a fragment of a lower jaw of a species of *Macacus*, associated with the bones of Mammals of the Ice age. (*Zittel*.) Of the same antiquity is a jaw found, according to Mr. Lydekker, near the village of Grays, in Essex, a fact which indicates a very great difference in the climate of that part of England from that of the present day.

GENUS DOLICHOPITHECUS.

Dolichopithecus, Depéret, Mem. Soc. Geol. Fr., Palæont., i., p. 11 (1890); Zittel, Handb. Palæont., iv., p. 707 (1893).

Allied to *Semnopithecus*, but having the muzzle longer and the limbs shorter and stouter. The genus has been based on three crania, several teeth, and a number of the bones of the skeleton, belonging to the species DOLICHOPITHECUS RUSCINENSIS, Depéret, from the Pliocene strata of Perpignan, in France. (*Zittel.*)

GENUS MESOPITHECUS.

Mesopithecus, Wagner, Abh. K. Bayer, Ak. (1) iii., p. 154; vii., abth., ii., p. 9; Zittel, Handb. Palæont., iv., p. 706 (1893).

This genus is based on a skull and teeth, which indicate an alliance with *Semnopithecus*, while the skeleton more resembles that of *Macacus inuus* (the Barbary Ape). The male had much longer and more powerful canines than the female. MESOPITHECUS PENTELICI, Wagner, the typical species, was founded on a fragment originally brought by a soldier in 1838 from Pikermi to Munich. Since then the whole skeleton has been recovered, and this is now one of the best-known species of the fossil *Anthropoidea*. It lived in Pliocene times, apparently in troops in the forests of the Pikermi plains, which at that date extended far into what is now the Mediterranean Sea. Remains of the same species have been discovered near Baltavar, in Hungary.

GENUS COLOBUS (*suprà*, p. 85).

In the Mid-Miocene forests of Europe this genus was represented by a species described by Professor Fraas as COLOBUS GRANDÆVUS, from Steinheim, in Würtemberg.

GENUS SEMNOPITHECUS (*suprà*, p. 100).

Among the forests in which bamboos, liquidambars, tulip-trees, magnolias, laurels, and pomegranates flourished in Upper Pliocene days, in the middle of Europe, there lived troops of Langurs, closely allied to those of our own time. SEMNOPITHECUS MONSPESSULANUS, Gervais, has been recovered from the strata of that age, at Montpellier, and near Casino in Tuscany. S. PALÆINDICUS (Lydekker) inhabited the forests in the region where the Sivalik hills now rise at the foot of the Himalayas, while S. ENTELLUS roamed over that region in the Pleistocene age, as its actual descendants do to-day.

FAMILY SIMIIDÆ (*suprà*, p. 143).

GENUS PLIOPITHECUS.

Pliopithecus, Gervais, C. R., xliii., p. 221 (1856); id., Zool. et Pal. Franc., p. 8 (1859); Forsyth Major, Atti. Soc. Ital. Sc. Nat., xv., p. 82 (1872); Zittel, Handb. Palæont., p. 708 (1893). *Protopithecus*, Ed. Lartet (nec Lund), Ann. Dep. Gers., 1851, p. 11.

This genus is very nearly allied to *Hylobates*, but differs from it in the form and proportions of its teeth. The genus is based on a lower jaw found in the Mid-Miocene of Central Europe. The incisors are small and long; the canines strong and but little taller than the incisors; the pre-molars are low, the anterior having one cusp, and the next two cusps; the molars have two pairs of opposite short, thick, conical cusps, with an additional one on the hind border, which enlarges into a talon in the hindmost of the set. The type species, PLIOPITHECUS ANTIQUUS, which very closely resembles the Gibbons, lived in the luxuriant forests of Sansan (Gers), and a variety of

it, described as *P. CHANTREI*, Depéret, inhabited the woods round Mont Ceindre. Remains of the same animals have been obtained in the Brown-coal beds of Elgg, in Switzerland and Göriach, in Steyermark.

GENUS HYLOBATES (*suprà*, p. 148).

True Gibbons, indistinguishable from those now living in the island, have been found in the caves of Borneo.

A finely preserved limb-bone, from the Eppelsheim beds of the Pliocene age, has also been ascribed to a species of this genus.

GENUS DRYOPITHECUS.

Dryopithecus, Lartet, C. R., xliii., p. 221 (1856); id., Mem. Soc. Geol., Palæon., i., p. 1, pl. 1 (1890); Gaudrey, C. R. Cx., p. 373 (1890); Zittel, Handb. Palæont., iv., p. 709 (1893).

This genus is based on remains from the Mid-Miocene of St. Gaudens (Haute Garonne), which indicate the former existence of an Ape more Man-like than any other. In size it approached the dimensions of the Chimpanzee; the incisors are smaller—an elevated character—and shorter than those in the Gorilla or the Chimpanzee. The canines are, as in the Gorilla, thick, sharp behind, and taller than the cheek-teeth; the anterior pre-molar is large, as in the Gorilla, has one root, and a strong cingulum on the inner side; the posterior pre-molar is longer than broad, is two-cusped, and has a flattened talon. The molar teeth have two pairs of opposite cusps, and a fifth on the hind border, which develops, on the hindmost tooth, into a two-cusped talon. The line of union of the lower jaw is high,

projects obliquely forward, and is longer and narrower than in Man. The late appearance of the last molar in the upper jaw was supposed to be a character which was alone common to *Dryopithecus* and Man; but Dr. Forsyth Major has observed that in *Macacus* the same late in-coming of the "wisdom tooth" occurs. The type species, *DRYOPITHECUS FONTANI*, Lartet, which lived in the Mid-Miocene forests of St. Gaudens, though the most Man-like of all the Tertiary Apes, was nevertheless further distant from Man than the Chimpanzees (*Anthropopithecus*). The form of the symphysis of its lower jaw indicates that its snout was considerably lengthened. Certain molar teeth found in the Bohnert strata from Melchingen and Salmendingen, in Würtemberg, and at one time considered to be human, have now been ascribed to *D. fontani*.

GENUS *SIMIA* (*suprà*, p. 170).

To this genus has been referred a molar tooth found in the Pliocene Strata of the Sivalik hills in India. It is considered to belong to an Orang-Utan, *SIMIA SATYRUS*.

GENUS *ANTHROPOPITHECUS* (*suprà*, p. 188).

A fragmentary jaw, also from the Pliocene beds in the Sivalik hills, has been described as *ANTHROPOPITHECUS SIVALENSIS* by Lydekker, who at first placed it in a new genus, *Palæopithecus*, but has more recently determined it to belong really to this now exclusively African genus. The relative smallness of the premolars distinguish it from the Orang. Should this determination be confirmed, the presence of a true Chimpanzee in Asia will be a fact of the highest interest in the geographical distribution of the *Simiidae*.

FAMILY HOMINIDÆ (*suprà*, p. 203)GENUS HOMO (*suprà*, p. 203).

Although, as has been stated above, the *Primates*, represented by lowly Lemuroids evincing relationship with the ancestors of the hoofed animals (*Ungulata*), first appeared in Eocene times, it would be a hopeless quest, as Professor Boyd-Dawkins points out, to seek for a highly specialised Man in a fauna where no living genus of Mammals was present.

The earliest appearance of Man on the globe has been considered by Dr. Hamy and M. de Mortillet to be in France in the middle of the Miocene age. They base their belief on flint fragments supposed to be artificially made, and on a cut upon the bone of an extinct Manatee considered to be of human handiwork. The evidence is, however, doubtful and unsatisfactory. In this age appeared such Anthropoids as *Pliopithecus* and the highly-developed *Dryopithecus* (p. 216), when the climate was tropical in mid-Europe, and warm and genial even within $8^{\circ} 15'$ of the North Pole. Professor Boyd-Dawkins believes that notwithstanding the favourable climate and the existence of so highly-developed an Ape as *Dryopithecus*, "were any Man-like animal living in the Miocene age, he might reasonably be expected to be not Man, but intermediate between Man and something else."

The Pliocene, *i.e.*, that portion of the Tertiary period in which the *genera* of mammals are mostly the same as those now living—only one *species* is known to be identical,—is the next horizon in which human remains have been asserted to have been found. The evidence is based on a skull found in a railway cutting in France after a landslip, and on a supposed artificially incised bone; but both these data require confirmation. Senhor Ribeiro has, however, obtained in Portugal implements

said to be of undoubted human manufacture in strata of this age, 1,200 feet below the surface ; and it has been claimed by Professor Whitney that, in California, a skull, as well as a mortar and pestle, have been recovered from Pliocene beds. The latter evidence has also been called in question.

The discovery at Crayford and in Kent's Hole in England, and in the Grotte d'Église in France, of flint implements of human manufacture, demonstrates without doubt that Man was living in Europe in the Pleistocene age—at which time most of the species of Mammals were identical with those now living—before the climate (which had been cooling since the Miocene) had become so cold as to cause the Arctic Mammals to swarm down in front of the approaching glaciation of the Northern Hemisphere. At that epoch the River-drift Men, as they are called, would have had to contend with Wolves, Bears, and Lions ; while Elephants and Rhinoceroses, Horses, Oxen, and Bison roamed wild around them. The implements of this “long-headed” race were stones, conveniently picked up and rough-hewn into rude choppers and scrapers, pointed borers, and cutting chips. There is evidence that their makers ranged across a more extended Europe than now, into Africa and continental India. After the River-drift Men, who disappeared with the Ice age, there came on the scene a race known as the Palæolithic “Cave Men.” Associated with their bones there have been found, in numerous caverns, remains of the Reindeer (*Cervus tarandus*), the Woolly Rhinoceros (*R. ticho rhinus*), and the Mammoth (*Elephas primigenius*). They were an artistic people, who have left drawings of extraordinary fidelity of the animals with which they were familiar, scratched on bones and horns of the animals themselves. Their implements were better chipped and shaped than were those of the

River-drift Men. They appear to have been ignorant of the potter's art; but they clothed themselves in skins, wore teeth-ornaments, and hunted the Reindeer and other animals—they were men, as Sir A. Geikie remarks, who must have had much similarity with the Esquimo—an identification, however, which has lately been strongly contested. Many fragments of their skeletons have been found in caverns in various parts of Europe: a lower jaw and an *ulna* at Naulette, a skull at Cro-Magnon, a lower jaw in the Grotte des Fées at Arcy-sur-Cure (Yonne), another from the rock shelter of La Madelaine in the Dordogne; portions of skulls from Neanderthal, Cannstatt, and Gibraltar, and as far north as Derbyshire, in England. The remains are, unfortunately, all very fragmentary, and afford little more information as to the physical characters of the Palæolithic races, than that they were “long-headed.” In 1886, however, in the Grotto of Spy, in the Belgian Province of Namur, were discovered two nearly complete skeletons, which showed that the Neanderthal skull, the lower jaw from Naulette, and the skulls from Cannstatt and Gibraltar all belonged to the same race. This race, which was widely spread over Europe in the Palæolithic age, presents more Simian characters than any yet unearthed. MM. Lohest and Fraipont, of Liege, who discovered and described the remains from Spy, have given in detail the following Simian characteristics which they present: The superciliary crests are far greater, and the forehead more retreating, than in any other known race—characters which closely resemble those in female and young male Orangs and Chimpanzees; and the occipital region of the skull shows a transverse crest as in some African tribes and in the above-named Anthropoid Apes. The lower jaw presents little or none of that markedly

human character—the chin; and the slope of the interior (or posterior) surface of its symphysis is intermediate between that of Man and the higher Apes. The bones of the fore-arm (the *ulna* and *radius*) are curved so as to produce a space between them, wider than in any human subject, and resembling what is seen in Apes. The thigh-bone (*femur*) is so shaped and articulated to the leg-bone (*tibia*) “that in order to maintain equilibrium the head and body must have been thrown forward.” This relation of the *femur* and *tibia* is found in the Apes, and it is highly probable that the Man of Spy presented a somewhat similar figure when walking; that is to say, the knees were bent and the body thrown forward. The crowns of the molar teeth of this race have, as in the lowest races of Man, four cusps, but with distinct and divergent roots, as among the Chimpanzees, but they increase in size from in front to behind, as they do in Apes. “The other and much more numerous characters of this long-headed skull, of the trunk and of the limbs, seem to be all human.” (*Fraipont*.) “Under whatever aspect we view this [the Neanderthal] cranium . . . whether we regard its vertical depression, the enormous thickness of its supra-ciliary ridges, its sloping occiput, or its long and straight squamosal suture—we meet with Ape-like characters, stamping it as the most pithecoïd of human crania yet discovered.” The cranial capacity being, however, about seventy-five cubic inches, “so large a mass of brain as this would alone suggest that the pithecoïd tendencies indicated by the skull did not extend deep into the organisation. . . In no sense, then, can the Neanderthal bones be regarded as the remains of a human being intermediate between Man and Apes.” (*Huxley*, 1867.) “The distance which separates the Man of Spy from the

modern Anthropoid Ape is undoubtedly enormous ; between the Man of Spy and the *Dryopithecus* it is a little less. But we must be permitted to point out that if the Man of the later Quaternary age is the stock whence existing races have sprung, he has travelled a great way. From the data now obtained, it is permissible to believe that we shall be able to pursue the ancestral type of Man and the Anthropoid Apes still further, perhaps as far as the Eocene, and even beyond." (*Fraipont.*) As these fossil human remains are now admitted to be of the Palæolithic age of the Pleistocene period, they give some idea of "the rate of evolution of the human species, and indicate that it has not taken place at a much faster or slower pace than that of other Mammalia. And if that is so, we are warranted in the supposition that the genus *Homo*, if not the species which the courtesy or the irony of naturalists has dubbed *sapiens*, was represented in Pliocene or even Miocene times. . . . There is no reason to suppose that the genus *Homo* was confined to Europe in the Pleistocene age ; it is much more probable that this, like other Mammalian genera of that period, was spread over a large extent of the surface of the globe. At that time, in fact, the climate of regions nearer the equator must have been far more favourable to the human species, and it is possible that under such conditions it may have attained a higher development than in the north." (*Huxley.*) Professor Huxley points out also, in the interesting article "The Aryan Question," in *The Contemporary Review* for November, 1890, from which we have taken the above extracts, that the Irish river-bed skulls, belonging to a dark-haired, long-headed race, and those of the Frisians, the blond, long-headed race, now living on the North German coast, unmistakably approach the Neanderthal and Spy type in many of their distinctive charac-

ters, "a sure indication" of the physiological continuity with the Pleistocene Neanderthaloid Men." The skulls of some of the Australian aborigines and of the broad-headed people of Borreby, in Denmark, also present a remarkable similarity to the Neanderthal skull—perhaps an indication that those are characters of a stage in the pedigree of the human species before it differentiated into any of the existing races. (*Huxley*.)

The next palæontological evidence of Man is found in the Neolithic cavern deposits, alluvial accumulations, peat mosses, lake bottoms, pile dwellings, and shell-mounds in various parts of Europe. Between the time that Palæolithic Man left the caves he occupied, and the date when the earlier Neolithic people began to deposit fragments of the records of their history in the kitchen-midden, which they piled in front of their shelters, a long period appears to have elapsed in many districts. The objects found in these refuse-heaps are not associated with the remains of the Mammoth, the Woolly Rhinoceros, or the Elephant, but with those of animals still living, or such as have lived down to within historical times. The remains of his skeleton indicate that Neolithic Man varied very much in stature. Some were tall, some short; some had long and others broad skulls. The long-skulled people had the same tall stature and cranial peculiarities as the blue-eyed, light haired, and long-headed *Xanthochroi* living at the present day in Eastern Prussia, North Belgium, Northern France, and Britain, though their bony fabric "bears marks of somewhat greater ruggedness and savagery." The broad-skulled Men were short, and agreed in physical characters with the majority of the people now inhabiting the Mediterranean sea-board—the *Melanochroi*—with black hair and black eyes. Many Neolithic graves have

given up also the remains of a tall, broad-skulled, and a short, long-skulled race.

Such are the only recovered links in the pedigree of our race, and extremely unsatisfactory they are ; indeed, beyond these few spots in Western Europe, in California, and the Mississippi valley in North America, Palæontology is silent as to the history of Man, and sheds no light upon his origin, or his last pithecoïd parents ; for, in Professor Huxley's impressive words, "so far as that light is bright it shows him substantially as he is now, and when it grows dim it permits us to see no sign that he was other than he is now."

III.—THE GEOGRAPHICAL DISTRIBUTION OF THE PRIMATES.

By means of the accompanying tables and maps I have attempted to present in a concise and clear manner the distribution of the *Lemuroidea* and the *Anthropoidea* in time and in space.

For the distribution of existing forms I have followed the divisions of the Globe proposed by Dr. Bowdler Sharpe in his essay on the Zoo-Geographical Areas of the World, published in "Natural Science" (Vol. III., pp. 100-108).

I. Table showing the genera of PRIMATES peculiar to, and common to, the Old and New Worlds.

A. LEMUROIDEA.

				OLD WORLD.		NEW WORLD.	
				(Palæogæa.)		(Neogæa.)	
				Living.	Extinct.	Living.	Extinct
Fam. CHIROMYIDÆ.							
Chiromys	...	...	†	—	—	—	—
Fam. TARSIIDÆ.							
Tarsius	...	...	†	—	—	—	—
3—v. 2				Q			

	OLD WORLD. (Palæogæa.)		NEW WORLD. (Neogæa.)	
	Living.	Extinct.	Living.	Extinct
Fam. MEGALADAPIDÆ.				
Megaladapis ...	—	†	—	—
Fam. LEMURIDÆ—				
Perodicticus ...	†	—	—	—
Loris ...	†	—	—	—
Nycticebus ...	†	—	—	—
Galago ...	†	—	—	—
Chirogale ...	†	—	—	—
Microcebus ...	†	—	—	—
Opolemur ...	†	—	—	—
Lemur ...	†	†	—	—
Mixocebus ...	†	—	—	—
Hapalemur ...	†	—	—	—
Lepidolemur ...	†	—	—	—
Avahis ...	†	—	—	—
Propithecus ...	†	—	—	—
Indris ...	†	—	—	—
Fam. ANAPTOMORPHIDÆ.				
Microchærus ...	—	†	—	—
Mixodectes ...	—	—	—	†
Cynodontomys ...	—	—	—	†
Omomys ...	—	—	—	†
Anaptomorp u ...	—	—	—	†
Plesiadapis ...	—	†	—	—
Protoadapis ...	—	†	—	—

Fam. ADAPIDÆ.	OLD WORLD. (Palæogæa.)				NEW WORLD. (Neogæa.)	
	Living.		Extinct.		Living.	Extinct.
	—	†	—	†
Adapis	—	†	—	†
Tomitherium	—	—	—	†
Laopithecus	—	—	—	†
Pelycodus	—	†	—	†
Microsyops	—	—	—	†
Hyopsodus	—	†	—	†
Indrodon	—	—	—	†
Opisthotomus	—	—	—	†
Apheliscus	—	—	—	†
Sarcolemur	—	—	—	†
Hipposyus	—	—	—	†
Bathrodon	—	—	—	†
Mesacodon	—	—	—	†
Stenacodon	—	—	—	†

B. ANTHROPOIDEA.

Fam. HAPALIDÆ.

Hapale	...	...	—	—	†	†
Midas	...	...	—	—	†	—

Fam. CEBIDÆ.

Chrysotrux	...	...	—	—	†	—
Protopithecus	...	...	—	—	—	†
Callithrix	...	...	—	—	†	†

				OLD WORLD.		NEW WORLD.	
				(Palæogæa.)		(Neogæa.)	
				Living.	Extinct.	Living.	Extinct.
Fam. CEBIDÆ—(<i>continued</i>).							
Nyctipithecus	—	—	—	†	—
Brachyurus	—	—	—	†	—
Pithecia	—	—	—	†	—
Alouatta	—	—	—	†	†
Cebus	—	—	—	†	†
Homunculus	—	—	—	—	†
Anthropops	—	—	—	—	†
Lagothrix	—	—	—	†	—
Brachyteles	—	—	—	†	—
Ateles	—	—	—	†	—

Fam. CERCOPITHECIDÆ.

Papio	...	...	†	†	—	—
Theropithecus	...	...	†	—	—	—
Cynopithecus	...	...	†	—	—	—
Oreopithecus	...	...	—	†	—	—
Macacus	...	...	†	†	—	—
Cercocebus	...	...	†	—	—	—
Cercopithecus	...	...	†	—	—	—
Dolichopithecus	...	...	—	†	—	—
Mesopithecus	...	...	—	†	—	—
Colobus	...	...	†	†	—	—
Semnopithecus	...	...	†	†	—	—
Nasalis	...	...	†	—	—	—

				OLD WORLD.		NEW WORLD.	
				(Palæogæa.)		(Neogæa.)	
Fam. SIMIIDÆ.				Living.	Extinct.	Living.	Extinct.
Pliopithecus	...	—				—	—
Hylobates	†	†		—	—
Dryopithecus	...	—		†		—	—
Simia	†	†		—	—
Gorilla	†	—		—	—
Anthropopithecus	...	†	†			—	—

It will be apparent from the above tables that, while the living *Lemuroidea* are confined to the Eastern Hemisphere, in past times some genera were not only common to both Hemispheres, but the Order was equally well, if not indeed better, represented in the New, than in the Old, World. Among the *Anthropoidea*, on the other hand, then, as now, none of the genera were common to both Hemispheres; and a large number of the genera, which then existed, were identical with genera now living, to a greater extent than among the *Lemuroidea*.

II. Tables to illustrate the distribution of the genera of Primates in time, in the different Zoo-Geographical Regions into which the World has been divided.

A. PALEARCTIC REGION.

	TERTIARY.									POST-TERTIARY.		NOW LIVING.	
	EOCENE.			MIOCENE.			PLIOCENE.			Pleistocene.	Recent.	Genus.	Species.
	Lower.	Middle.	Upper.	Lower.	Middle.	Upper.	Lower.	Middle.	Upper.				
LEMUROIDEA.													
Fam. Chiromyidae ...													
" Tarsiidae ...													
" Megaladapidae ...													
" Lemuridae ...													
" Anaptomorphidae ...	2	1	3										
" Adapidae ...	2	3											
ANTHROPOIDEA.													
Fam. Hapalidae ...													
" Cebidae ...													
" Cercopithecidae ...					2	1		4	1	2	2	1	3
" Simiidae ...					2			1		1	1	1	1
" Hominidae ...					?								

D. AUSTRALIAN REGION.

[illegible]

The above tables show that during the Eocene epoch of the Tertiary Period the *Lemuroidea* were confined to the Palæarctic and Nearctic Regions ; and, if the geological record were more perfect, we should probably find that they were distributed across the greater part of the Northern Hemisphere, which at that period was sub-tropical in climate. Outside these two regions no Lemuroid remains have been found after the close of the Eocene (with the exception of the solitary Lower Miocene genus *Laopithecus*) till the Recent Period, when the superficial deposits of Madagascar have yielded the sub-fossil *Megaladapis madagascariensis* and a large undescribed species (probably of a new genus) of *Lemuridæ*, both of which may have been living in the historic period. At the present day Lemuroids are unknown in either the Palæarctic or Nearctic Regions, and, with the exception of four species, none are now found outside the Ethiopian Region.

The *Anthropoidea*, on the other hand, first appear in the Neotropical Region, in the upper Eocene, but the age of the Santa Cruz formation, in which the remains occur, has not yet been settled with certainty. In the Eastern Hemisphere they appear in the Mid-Miocene, and continue through the Pliocene, the Pleistocene and Recent deposits. As yet no remains have been found in the Nearctic Region, where Lemuroid remains occur so abundantly.

The subjoined tables indicate the number of species in each of the six great Zoo-Geographical Regions, followed by others showing those peculiar to, and those living and fossil in, the various sub-divisions of these Regions:—

<i>A.</i>	<i>B.</i>	<i>C.</i>	<i>D.</i>	<i>E.</i>	<i>F.</i>
Palæarctic Region.	Ethiopian Region.	Indian Region.	Australian Region.	Nearctic Region.	Neotropical Region.

LEMUROIDEA.

CHIROMYIDÆ.

Chiromys	—	1	—	—	—	—
----------	---	---	---	---	---	---

TARSIIDÆ.

Tarsius	—	—	2	1	—	—
---------	---	---	---	---	---	---

Megaladapidæ.

Megaladapis	—	1	—	—	—	—
-------------	---	---	---	---	---	---

LEMURIDÆ.

Perodicticus	—	2	—	—	—	—
Loris	—	—	1	—	—	—
Nycticebus	—	—	1	—	—	—
Galago	—	6	—	—	—	—
Chirogale	—	3	—	—	—	—
Microcebus	—	5	—	—	—	—
Opolemur	—	2	—	—	—	—
Lemur	—	8	—	—	—	—
Mixocebus	—	1	—	—	—	—
Hapalemur	—	2	—	—	—	—
Lepidolemur	—	7	—	—	—	—

	<i>A.</i>	<i>B.</i>	<i>C.</i>	<i>D.</i>	<i>E.</i>	<i>F.</i>
	Palaearctic Region.	Ethiopian Region.	Indian Region.	Australian Region.	Nearctic Region.	Neotropical Region.
Gen. ined.	—	I	—	—	—	—
Avahis	—	I	—	—	—	—
Propithecus	—	4	—	—	—	—
Indris	—	I	—	—	—	—

Anaptomorphidæ.

Microchærus	7	—	—	—	—	—
Mixodectes	—	—	—	—	2	—
Cynodontomys	—	—	—	—	1	—
Omomys	—	—	—	—	1	—
Anaptomorphus	—	—	—	—	3	—
Plesiadapis	4	—	—	—	—	—
Protoadapis	2	—	—	—	—	—

Adapidæ.

Adapis	5	—	—	—	1	—
Tomitherium	—	—	—	—	1	—
Laopithecus	—	—	—	—	2	—
Pelycodus	1	—	—	—	4	—
Microsyops	—	—	—	—	3	—
Hyopsodus	1	—	—	—	6	—
Opisthotomus	—	—	—	—	?	—
Apheliscus	—	—	—	—	?	—
Sarcolemur	—	—	—	—	?	—
Hipposyus	—	—	—	—	?	—

<i>A.</i>	<i>B.</i>	<i>C.</i>	<i>D.</i>	<i>E.</i>	<i>F.</i>
Palearctic Region.	Ethiopian Region.	Indian Region.	Australian Region.	Nearctic Region.	Neotropical Region.

Adapidæ—(continued).

Bathrodon	—	—	—	—	?	—
Mesacodon	—	—	—	—	?	—
Stenacodon	—	—	—	—	?	—

ANTHROPOIDEA.**HAPALIDÆ.**

Hapale	—	—	—	—	—	8
Midas	—	—	—	—	—	14

CEBIDÆ.

Chrysothrix	—	—	—	—	—	4
Callithrix	—	—	—	—	—	13
Nyctipithecus	—	—	—	—	—	5
Brachyurus	—	—	—	—	—	3
Pithecia	—	—	—	—	—	5
Alouatta	—	—	—	—	—	6
Cebus	—	—	—	—	—	19
Lagothrix	—	—	—	—	—	2
Brachyteles	—	—	—	—	—	1
Ateles	—	—	—	—	—	10
Protopithecus	—	—	—	—	—	1
Homunculus	—	—	—	—	—	1
Anthropops	—	—	—	—	—	1
? Homocentrus	—	—	—	—	—	1
† Eudiastus	—	—	—	—	—	1

	<i>A.</i>	<i>B.</i>	<i>C.</i>	<i>D.</i>	<i>E.</i>	<i>F.</i>
	Palæarctic Region.	Ethiopian Region.	Indian Region;	Australian Region;	Nearctic Region.	Neotropical Region.
CERCOPITHECIDÆ.						
Papio	1	11	2	—	—	—
Theropithecus	—	1	—	—	—	—
Cynopithecus	—	—	1	1	—	—
Oreopithecus	1	—	—	—	—	—
Macacus	8	—	14	2	—	—
Dolichopithecus	1	—	—	—	—	—
Mesopithecus	1	—	—	—	—	—
Cercocebus	—	6	—	—	—	—
Cercopithecus	—	41	—	—	—	—
Colobus	1	10	—	—	—	—
Semnopithecus	1	—	31	—	—	—
Nasalis	—	—	1	—	—	—

SIMIIDÆ.

Pliopithecus	1	—	—	—	—	—
Hylobates	1	—	7	—	—	—
Dryopithecus	1	—	—	—	—	—
Simia	—	—	1	—	—	—
Gorilla	—	1	—	—	—	—
Anthropopithecus	—	2	1	—	—	—

The following is a sketch of the past and present distribution of the Primates in the different Sub-regions and Provinces recognised by Dr. Bowdler Sharpe in his paper on the "Zoo-Geographical Areas of the World" already referred to.

The black type indicates extinct or fossil species. The names of species peculiar to a certain area are printed in ordinary type, and those which are common to two or more areas are indicated by italics.

A. PALÆARCTIC REGION.

A¹. ARCTIC SUB-REGION.

I. Lemuroidea.			II. Anthropoidea.		
	Living.	Extinct.		Living.	Extinct.
Peculiar genera	—	—	Peculiar genera]	—	—
„ species	—	—	„ species	—	—

A². EURASIAN SUB-REGION.

A². α. EUROPEAN PROVINCE.

I. Lemuroidea.			II. Anthropoidea		
	Living.	Extinct.		Living.	Extinct.
Peculiar genera	—	3	Peculiar genera	—	3
„ species	—	20	„ species	—	9

The following species formerly existed in the Province :—

LEMUROIDEA.

1. *Michrochærus antiquus*. 2. *M. erinaceus*. 3. *M. edwardsi*.
4. *M. parvulus*. 5. *M. zitteli*. 6. *M. armatus*. 7. *M. (Cryptopithecus) siderolithicus*. 8. *Plesiadapis remensis*. 9. *P. gervaisi*.

10. *P. tournesarti*. 11. *P. daubrei*. 12. *Protoadapis crassiuscuspidens*. 13. *P. recticuspidens*. 14. *Adapis parisiensis*. 15. *A. lemuroides*. 16. *A. magna*. 17. *A. augustidens*. 18. *A. minor*. 19. *Pelycodus helveticus*. 20. *Hyopsodus jurensis*.

ANTHROPOIDEA.

1. *Macacus priscus*. 2. *M. pliocenus*. 3. *M. suevicus*. 4. *Dolichopithecus rusciniensis*. 5. *Colobus grandævus*. 6. *Pliopithecus antiquus*. 7. *P. chantrei*. 8. *Hylobates* sp. 9. *Dryopithecus fontani*.

A². β. EAST SIBERIAN PROVINCE.

I. Lemuroidea.		II. Anthropoidea	
Peculiar genera	absent.	Peculiar genera	absent.
„ species	„	„ species	„

A³. MANCHURIAN SUB-REGION.

I. Lemuroidea.		II. Anthropoidea	
	Living. Extinct.		Living. Extinct.
Peculiar genera	— —	Peculiar genera	— —
„ species	— —	„ species	2 —

In this Sub-region the following species are found at the present day :—

1. *Macacus fuscatus*. 2. *M. tcheliensis*.

A⁴. MEDITERRANEO-ASIATIC SUB-REGION.**A⁴. a. MEDITERRANEAN PROVINCE.**

I. Lemuroidea.			II. Anthropoidea.		
	Living	Extinct.		Living.	Extinct.
Peculiar genera	—	—	Peculiar genera	—	2
„ species	—	—	„ species	1	6

The following species are characteristic of this Province :—

1. *Papio atlanticus*. 2. *Oreopithecus bambolii*. 3. *Macacus inuus* (living and fossil). 4. *M. florentinus*. 5. *M. trarensis*. 6. *Mesopithecus pentelici*. 7. *Semnopithecus monspessulanus*.

A⁴. β. MEDITERRANEO-PERSIC PROVINCE.

I. Lemuroidea.		II. Anthropoidea.	
Peculiar genera	absent.	Peculiar genera	absent.
„ species	„	„ species	„

A⁴. γ. MONGOLIAN PROVINCE.

I. Lemuroidea.			II. Anthropoidea.		
	Living.	Extinct.		Living.	Extinct.
Peculiar genera	—	—	Peculiar genera	—	—
„ species	—	—	„ species	—	—

B. ETHIOPIAN REGION.

B¹. SAHARAN SUB-REGION.

I. Lemuroidea.			II. Anthropoidea.		
	Living.	Extinct.		Living.	Extinct.
Peculiar genera	—	—	Peculiar genera	—	—
„ species	—	—	„ species	—	—

B². SOUDANESE SUB-REGION.

I. Lemuroidea.			II. Anthropoidea.		
	Living.	Extinct.		Living.	Extinct.
Peculiar genera	—	—	Peculiar genera	—	—
„ species	—	—	„ species	3	—

In this Sub-region the following species appear to be found:—

1. *Galago senegalensis*. 2. *G. demidoffi*. 3. *Papio maimon*. 4. *P. babuin*. 5. *P. sphinx*. 6. *P. hamadryas*. 7. *Cercopithecus sabæus*. 8. *C. neglectus*. 9. *C. patas*. 10. *C. pyrrhonotus*.

B³. WEST AFRICAN SUB-REGION.

I. Lemuroidea.			II. Anthropoidea.		
	Living.	Extinct.		Living.	Extinct.
Peculiar genera	1	—	Peculiar genera	2	—
„ species	4	—	„ species	37	—

In this Sub-region the following species occur :—

1. *Perodicticus calabarensis*. 2. *P. potto*. 3. *Galago alleni*. 4. *G. demidoffi*. 5. *G. monteiri*. 6. *Papio maimon*. 7. *P. leucophæus*. 8. *P. babuin*. 9. *P. anubis*. 10. *P. sphinx*. 11. *Cercocebus fuliginosus*. 12. *C. æthiops*. 13. *C. albigena*. 14. *C. aterrimus*. 15. *Cercopithecus petaurista*. 16. *C. signatus*. 17. *C. erythrogaster*. 18. *C. buettikoferi*. 19. *C. martini*. 20. *C. ludio*. 21. *C. melanogenys*. 22. *C. nictitans*. 23. *C. stampflii*. 24. *C. erythrotis*. 25. *C. cephus*. 26. *C. cynosurus*. 27. *C. callitrichus*. 28. *C. mona*. 29. *C. albigularis*. 30. *C. campbelli*. 31. *C. leucampyx*. 32. *C. grayi*. 33. *C. pogonias*. 34. *C. diana*. 35. *C. palatinus*. 36. *C. brazze*. 37. *C. talapoin*. 38. *C. nigripes*. 39. *C. wolffi*. 40. *Colobus verus*. 41. *C. ferrugineus*. 42. *C. satanas*. 43. *C. ursinus*. 44. *C. vellerosus*. [? 45. *C. angolensis*.] 46. *C. guereza*. 47. *Gorilla gorilla*. 48. *Anthropopithecus niger*. 49. *A. calvus*.

B¹. ABYSSINIAN SUB-REGION.

I. Lemuroidea.			II. Anthropoidea.		
	Living.	Extinct.		Living.	Extinct.
Peculiar genera	—	—	Peculiar genera	1	—
„ species	—	—	„ species	5	—

This Sub-region is the habitat of the following species :—

1. *Papio doguera*. 2. *P. babuin*. 3. *P. thoth*. 4. *P. hamadryas*. 5. *Theropithecus gelada*. 6. *T. obscurus*. 7. *Cercopithecus sabaeus*. 8. *C. boutourlini*. 9. *Colobus guereza*.

*B*⁵. EAST AFRICAN SUB-REGION.

		I. Lemuroidea.				II. Anthropeidea.	
		Living.	Extinct.			Living.	Extinct.
Peculiar genera		—	—	Peculiar genera		—	—
„ species		I	—	„ species		II	—

In this Sub-region occur the following species :—

1. *Galago senegalensis*. 2. *G. garnetti*. 3. *G. crassicaudata*. 4. *Papio babuin*. 5. *P. ibeanus*. 6. *P. sphinx*. 7. *P. langheldi*. 8. *Cercocebus galeritus*. 9. *Cercopithecus rufo-viridis*. 10. *C. schmidt*. 11. *C. albigularis*. 12. *C. pygerythrus*. 13. *C. ochraceus*. 14. *C. stairsi*. 15. *C. moloneyi*. 16. *C. leucampyx*. 17. *Colobus rufo-mitratus*. 18. *C. kirki*. 19. *C. angolensis*. 20. *C. guereza*. 21. *C. caudatus*.

*B*⁶. SOUTH-AFRICAN SUB-REGION:*a*. CAPE PROVINCE.

		I. Lemuroidea.				II. Anthropeidea.	
		Living.	Extinct.			Living.	Extinct.
Peculiar genera		—	—	Peculiar genera		—	—
„ species		—	—	„ species		I	—

The following species inhabit this Province :—

1. *Papio porcarius* ; *Cercopithecus pygerythrus*.

β. NATALESE PROVINCE.

I. Lemuroidea.			II. Anthroipoidea.		
Living. Extinct.			Living. Extinct.		
Peculiar genera	—	—	Peculiar genera	—	—
„ species	—	—	„ species	1	—

The following species occur within this Province :—

1. *Galago senegalensis*. 2. *G. crassicaudata*. 3. *Cercopithecus pygerythrus*. 4. *C. albigularis*. 5. *C. samango*.

B'. CAMERONIAN SUB-REGION.

I. Lemuroidea.			II. Anthroipoidea.		
Living. Extinct.			Living. Extinct.		
Peculiar genera	—	—	Peculiar genera	—	—
„ species	—	—	„ species	—	—

In this Sub-region the following species occur :—

1. *Cercopithecus albigularis*. 2. *Colobus caudatus*,

B°. LEMURIAN SUB-REGION.

I. Lemuroidea.			II. Anthroipoidea.		
Living. Extinct.			Living. Extinct.		
Peculiar genera	12	2	Peculiar genera	—	—
„ species	34	2	„ species	—	—

The following species are peculiar to this Sub-region :—

I. *Chiromys madagascariensis*; *Chirogale*, 4 species; *Microcebus*, 4 species; *Opolemur*, 2 species; *Lemur*, 8 species; *Megaladapis madagascariensis*; *Gen. ined.*; *Mixocebus caniceps*; *Hapalemur*, 2 species, *Lepidolemur*, 7 species; *Avahis laniger*; *Propithecus*, 3 species; *Indris brevicaudatus*.

C. INDIAN REGION.

C¹. INDIAN-PENINSULAR SUB-REGION.

	I. Lemuroidea.			II. Anthropeidea.	
	Living.	Extinct.		Living.	Extinct.
Peculiar genera	I	—	Peculiar genera	—	—
„ species	I	—	„ species	6	4

The following species are characteristic of this Sub-region :—

1. *Loris gracilis*. 2. *Papio sub-himalayanus*. 3. *P. falconeri*.
4. *Macacus rhesus*. 5. *M. pileatus*. 6. *M. sinicus*. 7. *M. sivalensis*.
8. *Semnopithecus entellus*.* 9. *S. priamus*. 10. *S. hypoleucus*. 11. *S. cephalopterus*. 12. *S. palæindicus*.

C². INDO-MALAYAN SUB-REGION.

	I. Lemuroidea.			II. Anthropeidea.	
	Living.	Extinct.		Living.	Extinct.
Peculiar genera	—	—	Peculiar genera	2	—
„ species	I	—	„ species	19	—

* Living and fossil.

D² MOLUCCAN SUB-REGION.

I. Lemuroidea.			II. Anthropeidea.		
Living. Extinct.			Living. Extinct.		
Peculiar genera	—	—	Peculiar genera	—	—
„ species	—	—	„ species	—	—

Only one species is found in this Sub-region :—

Macacus cynomologus. (Timor ; Lombock.)

D³. PAPUAN. D⁴. AUSTRALIAN. D⁵. NEW ZEALAND. D⁶. FIJIAN. D⁷. HAWAIIAN SUB-REGIONS.

I. Lemuroidea.			II. Anthropeidea.		
Living. Extinct.			Living. Extinct.		
Peculiar genera	—	—	Peculiar genera	—	—
„ species	—	—	„ species	—	—

Both orders are unknown in these Sub-regions.

E. NEARCTIC REGION.**E¹. ARCTIC SUB-REGION.****a. ARCTIC PROVINCE.**

1. Lemuroidea and Anthropeidea—recent and extinct—unknown.

β. ALASKAN ARCTIC PROVINCE.

I. Lemuroidea and Anthropeidea—recent and extinct—unknown.

E². WARM TEMPERATE SUB-REGION.

	I. Lemuroidea.			II. Anthropeidea	
	Living.	Extinct.		Living.	Extinct.
Peculiar genera	—	15		Peculiar genera	— —
„ species	—	30		„ species	— —

The following species have been found fossil in this Sub-region :—

1. *Mixodectes pungens*. 2. *M. crassiusculus*. 3. *Cynodontomys latidens*. 4. *Omomys carteri*. 5. *Anaptomorphus æmulus*. 6. *A. homunculus*. 7. *Adapis tenebrosus*. 8. *Tomitherium rostratum*. 9. *Laopithecus robustus*. 10. *L. lemurinus*. 11. *Pelycodus jarrovi*. 12. *P. tutus*. 13. *P. frugivorus*. 14. *P. angulatus*. 15. *Microsyops spierianus*. 16. *M. elegans*. 17. *M. scottianus*. 18. *Hyopsodus acolytus*. 19. *H. paulus*. 20. *H. minusculus*. 21. *H. vicarius*. 22. *H. powellianus*. 23. *Indrodon* sp. 24. *Opisthotomus* sp. 25. *Apheliscus* sp. 26. *Sarcolemur* sp. 27. *Hipposyus* sp. 28. *Bathrodon* sp. 29. *Mesacodon* sp. 30. *Stenacodon* sp.

*E*³. COLD TEMPERATE SUB-REGION.

	I. Lemuroidea.			II. Anthropoidea.	
	Living.	Extinct.		Living.	Extinct.
Peculiar genera	—	—	Peculiar genera	—	—
„ species	—	—	„ species	—	—

Both the orders of Primates are absent from this Sub-region.

F. NEOTROPICAL REGION.*F*¹. ANTILLEAN SUB-REGION.

	I. Lemuroidea.			II. Anthropoidea.	
	Living.	Extinct.		Living.	Extinct.
Peculiar genera	—	—	Peculiar genera	—	—
„ species	—	—	„ species	—	—

Both orders of the Primates are absent from this Sub-region.

*F*². CENTRAL AMERICAN SUB-REGION.*a*. MEXICAN PROVINCE.

	I. Lemuroidea.			II. Anthropoidea.	
	Living.	Extinct.		Living.	Extinct.
Peculiar genera	—	—	Peculiar genera	—	—
species	—	—	„ species	—	—

The following species is recognised from this Province* :—

1. *Ateles vellerosus*.

β. ISTHMIAN PROVINCE.

	I. Lemuroidea.			II. Anthropeidea.	
	Living.	Extinct.		Living.	Extinct.
Peculiar genera	—	—		—	—
„ species	—	—		4	—

The following species are inhabitants of this Province :—

1. *Midas rosalia*. 2. *M. geoffroyi*. 3. *Chrynothrix cerstedti*. 4. *Nyctipithecus rufipes*. 5. *Alouatta villosa*. 6. *A. palliata*. 7. *Cebus hypoleucus*. 8. *Ateles geoffroyi*. 9. *A. rufiventris*. 10. *A. ater*. 11. *A. vellerosus*.

F^o. SUB-ANDEAN SUB-REGION.

	I. Lemuroidea.			II. Anthropeidea.	
	Living.	Extinct.		Living.	Extinct.
Peculiar genera	—	—		—	—
„ species	—	—		7	—

The following species are recorded as inhabiting this Sub-region :—

1. *Hapale leucopus*. 2. *Midas rosalia*. 3. *M. geoffroyi*. 4. *M. cædipus*. 5. *Chrysothrix sciurea*. 6. *Callithrix ornata*. 7. *Nyctipithecus*

* *Midas rufiventer*, said to be from Mexico by Dr. Gray, is now believed to be Amazonian. Mr. Bates' statement that *Hapale pygmæa* is found in Mexico (vol. i., p. 136) is erroneous, and no species of Marmoset is known from the Mexican Province.

lemurinus. 8. *N. felinus*. 9. *Alouatta senicula*. 10. *Cebus hypoleucus*.
 11. *C. fatuellus*. 12. *C. capucinus*. 13. *C. albifrons*. 14. *C. chrysopus*.
 15. *Lagothrix lagothrix*. 16. *L. infumatus*. 17. *Ateles variegatus*. 18.
A. geoffroyi. 19. *A. rufiventris*. 20. *A. ater*. 21. *A. fusciceps*. 22.
A. cucullatus.

F⁴. AMAZONIAN SUB-REGION.

	I. Lemuroidea.			II. Anthropoidea.	
	Living.	Extinct.		Living.	Extinct.
Peculia gen	—	—	Peculiar genera	2	—
„ spec	—	—	„ species	34	—

The following species are found in this Sub-region :—

1. *Hapale jacchus*. 2. *H. humeralifer*. 3. *H. chrysoleuca*. 4. *H. pygmæa*. 5. *H. melanura*. 6. *Midas labiatus*. 7. *M. rufiventer*. 8. *M. mystax*. 9. *M. pileatus*. 10. *M. weddelli*. 11. *M. nigricollis*. 12. *M. illigeri*. 13. *M. bicolor*. 14. *M. midas*. 15. *M. ursulus*. 16. *Chrysothrix sciurea*. 17. *C. usta*. 18. *Callithrix torquata*. 19. *C. cuprea*. 20. *C. amicta*. 21. *C. cinerascens*. 22. *C. personata*. 23. *C. nigrifrons*. 24. *C. castaneiventris*. 25. *Nyctipithecus trivirgatus*. 26. *N. lemurinus*. 27. *N. felinus*. 28. *Brachyurus melanocephalus*. 29. *B. rubicundus*. 30. *B. calvus*. 31. *Pithecia monachus*. 32. *P. pithecia*. 33. *P. satanas*. 34. *P. chiropotes*. 35. *P. albinasa*. 36. *Alouatta senicula*. 37. *A. beelzebul*. 38. *A. ursina*. 39. *Cebus monachus*. 40. *C. fatuellus*. 41. *C. cirrifer*. 42. *C. albifrons*. 43. *Lagothrix infumatus*. 44. *Ateles variegatus*. 45. *A. paniscus*. 46. *A. mar ginatus*. 47. *A. ater*.

F⁵. BRAZILIAN SUB-REGION.

	I. Lemuroidea.			II. Anthropoidea.	
	Living.	Extinct.		Living.	Extinct.
Peculiar genera	—	—	Peculiar genera	1	1
„ species	—	—	„ species	20	5

The following species are recorded from this Sub-region. In many cases, however, the habitat "Brazil" may be found to be erroneous, as it was often made, in olden days, to include Amazonia.

1. *Hapale aurita*. 2. *H. melanura*. 3. *H. jacchus*. 4. *H. grandis*.
 5. *Midas rosalia*. 6. *M. fuscicollis*. 7. *M. chrysopygus*. 8. *Chrysothrix*
usta. 9. *C. entomophaga*.* 10. *Callithrix moloch*. 11. *C. castaneiventris*.
 12. *C. melanochir*. 13. *C. gigot*. 14. *C. chlorocnomys*. 15. *C.*
primæva. 16. *Nyctipithecus azaræ*. 17. *Alouatta nigra*. 18. *A.*
ursina. 19. *Cebus lunatus*. 20. *C. flavus*. 21. *C. capucinus*. 22. *C.*
monachus. 23. *C. variegatus*. 24. *C. robustus*. 25. *C. annellatus*.
 26. *C. albifrons*. 27. *C. flavescens*. 28. *C. fatuellus*. 29. *C. cirrifer*.
 30. *C. macrognathus*. 31. *C. vellerosus*. 32. *C. subcristatus*. 33. *C.*
capillatus. 34. *C. azaræ*. 35. *Brachyteles arachnoides*. 36. *Protopithecus brasiliensis*.

* *Chrysothrix entomophaga* is stated by me (vol. i., p. 156) to inhabit Central America. The Squirrel-Monkey of Panama, however, is *C. ærstedii*, and *C. entomophaga* must be restricted to the Brazilian Sub-region (cf. Alston, Biol. Centr. Amer. Mamm., p. 16).

*F*⁶. PATAGONIAN SUB-REGION.

I. Lemuroidea.			II. Anthropoidea.		
Living. Extinct.			Living. Extinct.		
Peculiar genera	—	—	Peculiar genera	—	4
„ species	—	—	„ species	—	4

The following fossil species have been recorded from this Sub-region :—

1. *Homunculus patagonicus*. 2. *Anthropops perfectus*. 3. *Homocentrus argentinus*. 4. *Eudiastus lingulatus*.

APPENDIX.

During the passage of this volume through the press, a good deal of additional material has come into the author's hands, while the results of important recent explorations have also been published. The following appendix has, therefore, been added to include the latest additions to our knowledge of the Anthropoids dealt with in its pages.

On page 82, the Talapoin (*Cercopithecus talapoin*) has been relegated to a group (and, indeed, it had been assigned by Geoffrey to a distinct genus—*Miopithecus*), in which it is the sole example on account of the supposed peculiarity of possessing but three tubercles on the posterior lower molar. A specimen which the author has recently examined shows that this character is not invariable, and the species should, therefore, in his opinion, be transferred to among the Green Guenons—Group II., CERCOPITHECI CHLORONOTI—and be placed next after the Tantalus Guenon on page 62.

The extremely important collections made by his friend Dr. Forsyth Major during his adventurous explorations in Madagascar in the years 1894 to 1896—from which he has but just returned—have made it necessary to add on page 212 a new family to the *Anthropoidea*. In the marshes of Sirabé, in Central Madagascar, he discovered the fossil remains of a species of true monkey—a group hitherto unknown to occur in that island—which must have been a contemporary of the *Æpyornis*, the well-known giant moa-like ratite bird which once lived there, but is now extinct. The fragments so far recovered show that in this creature the orbits were directed straight forward and

were separated from the temporal fossæ by a bony wall. The lachrymal foramen was situated inside the margin of the orbit ; the inner upper incisors were in contact in the middle line ; the nasals were broad and concave in profile, while the facial contour, viewed from the side, was very high. The pattern of the molars closely agreed with that seen in the Guenons (*Cercopithecidæ*). "The nasals are broad," continues Dr. Major, "and so is the whole of the interorbital region, its transversal diameter almost equalling that of the orbits, and therefore exceeding that obtained in the genera of *Anthropoidea*, which show the maximum of external extension of the region (*Mycetes*, *Hylobates*, *Homo*)." This is about the only point in which the fossil approaches some of the *Lemuroidea*. The formula of its upper teeth is I 2, C 1, P 3, M 3 = 18, or that which has been found heretofore to be characteristic of the New World monkeys. "The three molars are each composed of four tubercles, the outer and inner pairs being placed opposite one another and connected together by transverse ridges. This is the pattern of the *Cercopithecidæ* ; but, unlike the Old World monkeys, the molars decrease in size from before backwards" (*Major*). In the lower jaw the formula appears to have been I 2, C 1, P 2, M 3 = 16. Hence "whilst the dental formula of the upper teeth agrees with that of the *Cebidæ*, it is quite peculiar in the lower jaw, and whilst the pattern of the molars is that of the *Cercopithecidæ*, the premolars differ alike from Old and New World monkeys. . . . These combined characters amply justify the establishment of a separate family of *Anthropoidea* for the Malagasy fossil, intermediate in some respects between the South American *Cebidæ* and the Old World *Cercopithecidæ*, besides presenting characters of its own." Dr. Forsyth Major has, therefore, proposed the new genus *Nesopithecus* for the reception of this most remarkable monkey, under the new family of *Nesopithecidæ*. The discovery of *Nesopithecus roberti*,

as he has designated the species, suggests, as Dr. Major has set forth in the *Geological Magazine* for October, 1896, page 436, "the following general conclusions:—

"(1) We may look forward in Continental Africa likewise for the discovery of Tertiary monkeys, intermediate between *Cebidæ* and *Cercopithecidæ*.

"(2) The recent African *Cercopithecidæ* are not invaders from the North-East, as has been supposed; on the contrary, most, if not all, of the Tertiary monkeys of Europe and Asia are derived from the Ethiopian region. The home of a part at least of the *Anthropoidea* seems to have been in the Southern Hemisphere. This assumption is corroborated by the two facts—that *Anthropoidea* make their appearance for the first time in the later Tertiary of Europe and Asia, and that they are entirely absent from the Tertiary of North America."

After the first paragraph on page 219, the discoveries of Dr. Eugene Dubois, made since these pages were written, necessitate the insertion of the following paragraphs.

In the year 1892 this distinguished geologist made one of the most important contributions to our knowledge of the antiquity of man. In that year he disinterred a large number of vertebrate remains from beds—determined to be of late Pliocene, if not of Miocene age—"of cemented volcanic tuff, consisting of clay, sand, and consolidated lapilli," at Trinil on the slope of the Kendeng Hills in Java. Among these remains were a portion of a cranium, two molar teeth, and a femur, presenting mixed simian and human characters. The dimensions of the skull-cap showed that the internal capacity of the cranium was about 1,000 cubic centimetres, while the largest skulls of the *Simiidae* averaged only about 500 centimetres. With the exception of this large capacity, the calvarium presented few characters which were not strongly

simian, and of all the apes it most resembled the Gibbons' (*Hyllobates*); but it was far superior in its cranial arch—low and depressed as the arch was—to that of any ape. The frontal region was narrow and the supraciliary ridges prominent. The neck area of the occipital bone was also ape-like in form. The thigh-bone (*femur*), on the other hand, presented human characters in a very marked degree, and gave no indication that the individual who owned it was in the habit of sitting on his hams. The molar teeth were likewise more human than ape-like, although they presented many strong simian characters. Dr. Dubois has assigned these remarkable fossils to a species which he has named *Pithecanthropus erectus* (the Erect Ape-man), as he believes that their owner occupied a place in the genealogical tree below the point of devarication of the anthropoid apes from the human line. Dr. Cunningham, of Dublin, however, who is one of our most eminent anatomists and anthropologists, would place it “on the human line, a short distance above the point at which the anthropoid branch is given off”; for he could “not believe that an ape-form with a cranial capacity of 1,000 centimetres could be the progenitor of the man-like apes, the largest of which had a capacity of only 500. Such a supposition would necessarily involve the assumption that the anthropoid apes were a degenerated branch from the common stem.” Altogether, then, a study of these important remains tends to show that *Pithecanthropus* had the lowest human cranium known, and was the most ape-like ancestor of the human race yet described. He was very nearly as much below the Neanderthal man as he was below the normal European. It should be stated that some doubt has been expressed whether all the remains belong to one and the same species of animal. Dr. Dubois' arguments for their really belonging to the same individual appear, however, very convincing.

On page 223, after the close of the first paragraph, insert :—

In the Palæolithic Terrace-Gravels at Galley Hill, in Kent, in strata in which numerous palæolithic implements have been found, one of the most interesting discoveries of the ancient inhabitants of England was made in 1895. In these strata was discovered a human skull with a lower jaw, and parts of the limb bones. The skull is very long and narrow ; its breadth index being above 64, and its height index 67. The supraciliary ridges were large and the glabella prominent, with the forehead receding and the occiput flattened below, while the hindmost molar was larger than the first. The skull showed numerous points of resemblance to the Neanderthal and Spy crania ; as well as presenting affinities with the skulls of the early Neolithic race. The limb bones gave indication that the individual was short of stature, standing slightly over five feet. The evidence that these remains were embedded naturally in the Pleistocene age in the apparently undisturbed gravels in which they were found, and not interred at a much later period, was very strong.

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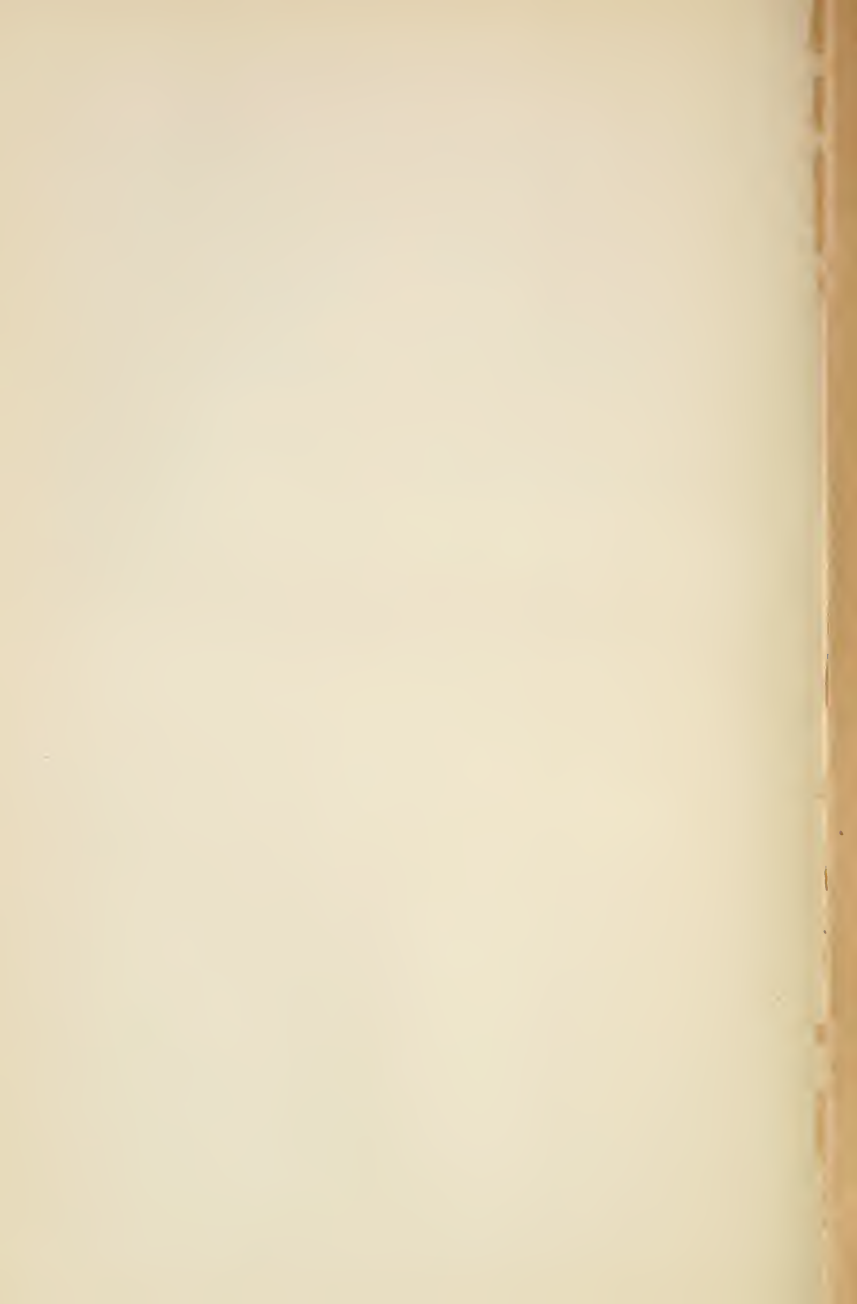
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